SHARP SERVICE MANUAL

S8409R9H56PJ/





MODEL R-9H56

In interests of user-safety the oven should be restored to its original condition and only parts identical to those specified should be used.

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SERVICE MANUAL SHARP

CONVECTION MICROWAVE OVEN

R-9H56

GENERAL IMPORTANT INFORMATION

This Manual has been prepared to provide Sharp Corp. Service engineers with Operation and Service Information.

It is recommended that service engineers carefully study the entire text of this manual, so they will be qualified to render satisfactory customer service.

CAUTION MICROWAVE RADIATION

DO NOT BECOME EXPOSED TO RADIATION FROM THE MICROWAVE GENERATOR OR OTHER PARTS CONDUCTING MICROWAVE ENERGY.

Service engineers should not be exposed to the microwave energy which may radiate from the magnetron or other microwave generating devices if it is improperly used or connected. All input and output microwave connections, waveguides, flanges and gaskets must be secured. Never operate the device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while the device is energized.

WARNING

Never operate the oven until the following points are ensured.

- (A) The door is tightly closed.
- (B) The door brackets and hinges are not defective.
- (C) The door packing is not damaged.
- (D) The door is not deformed or warped.
- (E) There is not any other visible damage with the oven.

Servicing and repair work must be carried out only by trained service engineers.

Removal of the outer wrap gives access to potentials above 250V.

All the parts marked " Δ " on parts list may cause undue microwave exposure, by themselves, or when they are damaged, loosened or removed.

SHARP CORPORATION
OSAKA, JAPAN

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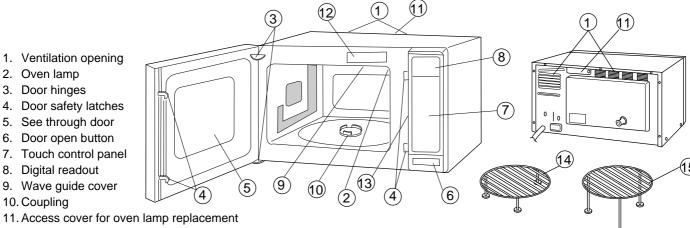
WIRING DIAGRAM

PARTS LIST

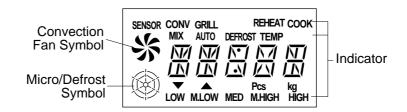
PRODUCT SPECIFICATIONS

ITEM	DESCRIPTION
Power Requirements	240 Volts 50 Hertz Single phase, 3 wire earthed
Power Consumption	1500 W (Microwave) 1600 W (Convection)
Power Output	750 watts nominal of RF microwave energy (AS 2895 1986) 850 watts (IEC-705-1988) Operating frequency of 2450MHz
Convection heater	1500 W
Case Dimensions	Width 627mm Height 378mm Depth 483mm
Cooking Cavity Dimensions	Width 410mm Height 245mm Depth 410mm
Control Complement	Touch Control System Clock (1:00 - 12:59) Timer (0 - 99 min. 99 sec.) Microwave Power for Variable Cooking Repetition Rate; HIGH
Set Weight	<u> </u>
Set Weight	Approx. 29 kg

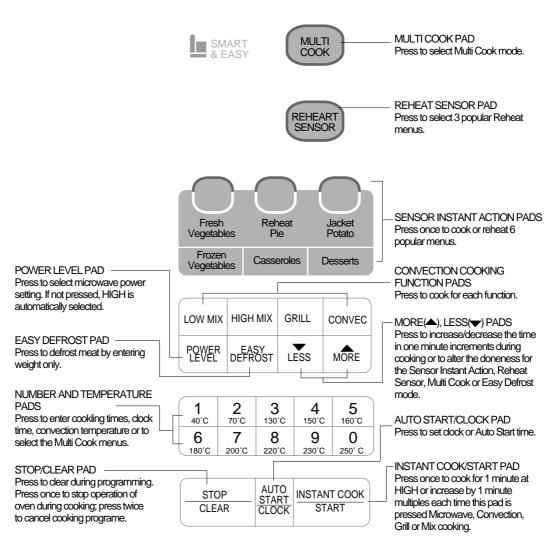
APPEARANCE VIEW



- 12. Menu label
- 13. Rating label
- 14. low rack
- 15. High rack



TOUCH CONTROL PANEL



OPERATION SEQUENCE

The following is a description of component functions during oven operation.

Relay and Components Connection

RELAY	CONNECTED COMPONENT
RY1	Oven lamp/ Turntable motor
RY2	Power transformer
RY3	Convection heater
RY4	Damper motor
RY5	Convection motor
RY6	Fan motor

OFF CONDITION

Closing the door activates all door interlock switches: upper latch switch, lower latch switch and stop switch. (In this condition, the monitor switch contacts are closed.)

When oven is plugged in a wall outlet (240V 50Hz), 240volts A.C. is supplied to the control unit. (Figure O-1):

- 1. The display flashes "88:88".
 - To set any programmes or set the clock, you must first touch the STOP/CLEAR pad.
 - ": "appears in the display and the time counts up every minute.
- NOTE: When the oven door is opened, the oven lamp comes on at this time.
- 2. A signal is input to the control unit, energizing the coil of shut-off relay (RY4).
 - RY4 contacts close, completing a circuit to the damper motor. The damper motor mow operates moving the damper to the open position, thereby closing the contacts of damper switch inputs a signal to the control unit.
 - The coil of relay RY4 is de-energized, opening its contacts, thereby turning off the damper motor.

MICROWAVE COOKING CONDITION HIGH COOKING

Program desired cooking time and Variable Cooking Control with the touching NUMBER pads and the POWER LEVEL pad. When the START pad is touched, the following operations occur:

- The contacts of relays are closed and components connected to relays are turned on (RY1, RY2, RY6). (Figure O-2)
- 240 volts A.C. is supplied to the primary winding of the power transformer. The voltage is converted to about 3.35 volts A.C. output on the filament winding and high voltage of approximately 2120 volts A.C. on the high voltage winding.
- 3. The filament winding voltage (3.35 volts) heats the magnetron filament and the high voltage (2120 volts) is sent to the voltage doubling circuit.
- 4 The 2450 MHz microwave energy produced in the magnetron generates a wave length of 12.24 cm. This energy is channelled through the waveguide (transport channel) into the oven cavity, where the food is placed to

be cooked.

- 5. Upon completion of the cooking time, the power transformer, oven lamp, etc. are turned off and the generation of microwave energy is stopped. The oven will revert to the OFF condition..
- 6 When the door is opened during a cook cycle, the monitor switch, upper latch switch, lower latch switch and stop switch are activated with the following results. The circuits to the turntable motor, cooling fan motor and high voltage components are de-energized, the oven lamp remains on and the digital read-out displays the time still remaining in the cook cycle when the door was opened.
- 7. The monitor switch is electrically monitoring the operation of the upper latch switch and lower latch switch and is mechanically associated with the door so that it will function in the following sequence.
- 1) When the door opens from a closed potion, the upper latch switch and the lower latch switch open their contacts, and then the monitor switch contacts close.
- When the door is closed, from the open position, the monitor switch contacts first open, and then the contacts of the upper latch switch and lower latch switch must be closed.

If the common and normal open contacts of upper latch switch and the lower latch switch fail with their contacts closed when the door is opened, the closing of the monitor switch contacts will form a short circuit through the fuse, upper latch switch and the lower latch switch, causing the monitor fuse to blow.

MEDIUM HIGH, MEDIUM, MEDIUM LOW, LOW COOKING

When variable cooking power is programmed, the 240 volts A.C. is supplied to the power transformer intermittently through the contacts of the relay (RY2) which is operated by the control unit within a 32-second time base. Microwave power operation is follows:

VARI MODE	ON TIME	OFF TIME
HIGH (100% power)	32 sec.	0 sec.
MED HIGH (approx. 70% power)	24 sec.	8 sec.
MED (approx. 50% power)	18 sec.	14sec.
MED LOW (approx. 30% power)	12 sec.	20 sec.
LOW (approx. 10% power)	6 sec.	26 sec.

NOTE: The ON/OFF time ratio does not exactly correspond to the percentage of microwave power, because approx. 2 seconds are needed for heating up the magnetron filament.

CONVECTION COOKING CONDITION

PREHEATING CONDITION

Program desired convection temperature by touching the CONVECTION pad and the temp. pad. When the START pad is touched, the following operations occur:

1. The coil of shut-off relays RY1+RY5+RY6 are energized, the oven lamp, cooling fan motor, turntable motor and convection motor are turned on.

- The coil of relay (RY4) is energized by the CPU unit. The damper is moved to the closed position, opening the damper switch contacts. The opening of the damper switch contacts sends a signal to the LSI on the CPU unit de-energizing the relay (RY4) and opening the circuit to the damper motor.
- 3. The coil of heater relay (RY3) is energized by the CPU unit and the main supply voltage is added to the convection heater.
- 4. When the oven temperature reaches the selected preheat temperature, the following operations occur:
- 4-1. The heater relay (RY3) is de-energized by the CPU unit temperature circuit and thermistor, opening the circuit to the convection heater.
- 4-2. The oven will continue to function for 15 minutes, turning the convection heater on and off, as needed to maintain the selected preheat temperature. The oven will shut-down completely after 15 minutes.

CONVECTION COOKING CONDITION

When the preheat temperature is reached, a beep signal will sound indicating that the holding temperature has been reached in the oven cavity. Open the door and place the food to be cooked in the oven. Program desired cooking time and convection temperature by touching the number pad, CONVECTION pad and Temperature pad. When the START pad is touched, the following operations occur:

- 1. The numbers of the digital read-out start the count down to zero.
- 2. The oven lamp, turntable motor, cooling fan motor and convection motor are energized.
- 3. Heater relay (RY3) is energized (if the cavity temperature is lower than the selected temperature) and the main supply voltage is applied to the convection heater to return to the selected cooking temperature.
- 4. Upon completion of the cooking time, the audible signal will sound, and oven lamp, turntable motor, cooling fan motor and convection motor are de-energized. At the end of the convection cycle, if the cavity air temperature is above 116°C, the circuit to (RY6) will be maintained (by the thermistor circuit) to continue operation of the cooling fan motor until the temperature drops below 116°C, at which time the relay will be de-energized, turning off the fan motor. Relay (RY5) will however, open as soon as the convection cycle has ended, turning off the convection fan motor. This will now cool and allow the damper door to open.
- At the end of the convection cook cycle, shut-off relay (RY4) is energized turning on the damper motor. The damper is returned to the open position, closing the damper switch contacts which send a signal to the control unit, de-energizing shut-off relay (RY4).

AUTOMATIC MIX COOKING CONDITION

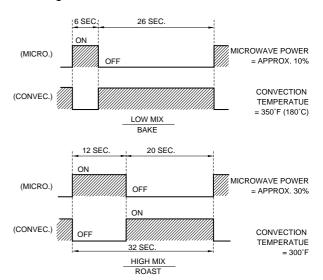
Program desired cooking time and temperature by touching the number pads and the LOW MI or HIGH MIX pad. When the START pad is touched, the following operations occur:

 The numbers of the digital read-out start the count down to zero.

- 2. The shut-off relay (RY1+RY5+RY6) energized, turning on the oven lamp, turntable motor, cooling fan motor and convection motor.
- The shut-off relay (RY4) is energized.
 The damper door is closed from the open position.
- 4. The heater relay (RY3) is energized, adding the mains supply voltage to the convection heater.
- 5. Now, the oven is in the convection cooking condition.
- 6. When the oven temperature reaches the selected temperature, the following operations occur:
- 6-1. The power supply voltage is added to the convection heater and power transformer alternately.
- 6-2. The convection heater operates through the heater relay (RY3) contacts and the power transformer operates through the cook relay (RY2) contacts.
- 6-3. These are operated by the CPU unit to supply alternately within a 32 second time base, convection heat and microwave energy.

The relationship between the convection and microwave power operations are as follows.

Note: The ON and OFF time ratio does not correspond with the percentage of microwave power, because approx. 2 seconds are needed for heating of the magnetron filament.



Note: During alternate Microwave/Convection operation, the convection heater is energized only if the cavity temperature drops below the set temperature.

ABSOLUTE HUMIDITY SENSOR (AH SENSOR) COOKING CONDITION

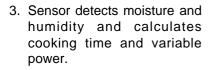
In case where the AH sensor is used (REHEAT SENSOR or SENSOR INSTANT ACTION), the foods are cooked in microwave cooking mode without figuring time, power level or quantity. When the oven senses enough steam from the food, it relays the information to its microprocessor which will calculate the remaining cooking time and power level needed for best results.

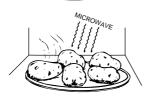
When the food is cooked, water vapour is developed. The sensor "senses" the vapour and its resistance increases gradually. When the resistance reaches the value set according to the menu, supplementary cooking is started.

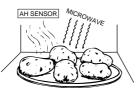
The time of supplementary cooking is determined by experi-

ment with each food category and inputted into the LSI. An example of how sensor works:

- 1. Potatoes at room temperature. Vapour is emitted very slowly.
- 2. Heat potatoes. Moisture and humidity is emitted rapidly. You can smell the aroma as it cooks.







AH SENSOR COOKING SEQUENCE

- In case the AH sensor cooking condition is started, the coil of shut-off relays (RY1+RY6) are energized, the oven lamp and cooling fan motor are turned on, but the power transformer is not turned on.
- NOTE: The oven should not be operated on AH SENSOR COOKING immediately after plugging in the unit. Wait five minutes before cooking on AH SENSOR COOKING CONDITION.
- After about 16 seconds, the cook relay (RY2) is energized.
 The power transformer is turned on, microwave energy is produced and first stage is started. The 16 seconds is the cooling time required to remove any vapour from the oven cavity and sensor.

Figure O-2

- NOTE: During this first stage, do not open the door or touch STOP/CLEAR pad.
- 3. The oven will go to the Mix Cooking Condition at the 2nd. or 3rd. stage when Reheat pie, Casseroles or Desserts has been chosen. (Figure O-4)
- 4. When the sensor detects the vapour emitted from the food, the display switches over to the remaining cooking time and the timer counts down to zero. At this time, the door may be opened to stir food, turn it or season, etc.
- NOTE: In case where a small quantity of food is cooked, the oven will stop without displaying the remaining cooking time.
- When the timer reaches zero, an audible signal sounds.
 The shut-off relay (RY1+RY6) and cook relay (RY2) are de-energized and the power transformer, oven lamp, etc. are turned off.
- 6. Opening the door or touching the STOP/CLEAR pad, the time of day will reappear on the display and the oven will revert to an OFF condition.

MULTI COOK

MULTI COOK will automatically compute the oven temperature, microwave power and cooking time for baking and roasting. Set the desired program by touching the MULTI COOK pad, and number pad. Enter the weight by touching the Number pads. When the START pad is touched, the following operations occur:

1. The COOK indicator will light and the Microwave Symbol

- and/or the Convection Fan Symbol will rotate.
- 2. The cooking time will appear on the display and start counting down to zero. The cooking time is adjusted automatically according to the weight of the food.
- 3. The shut-off relays (RY1, RY3, RY5 and RY6) are energized, turning on the oven lamp, turntable motor, cooling fan motor and convection motor. The power supply voltage is added to the convection heater.
- 4. Now, the oven is in the convection cooking mode.
- 5. When the oven temperature has reached the programmed convection temperature, the oven goes into the programmed cooking mode.
- 6. At the end of the MULTI COOK cycle, the damper is returned to the open position and the oven will go to the off condition. The cooling fan will remain on until the oven has cooled.

EASY DEFROST COOKING

The EASY DEFROST key is a special function key to defrost meats and poultry faster and better.

EASY DEFROST key has 4 defrost stages.

EASY DEFROST automatically defrosts roast beef, etc. When EASY DEFROST is selected and the food weight is entered by using the number pads, the oven will cook according to the special cooking sequence. (Figure O-2)

FIRE SENSING FEATURE (MICROWAVE MODE)

This model incorporates a sensing feature which will stop the oven's operation if there is a fire in the oven cavity during microwave cooking.

This accomplished by the LSI repeatedly measures the voltage across the temperature measurement circuit (thermistor) during it's 32-seconds time base comparing the obtained voltage measurements. If the most recent voltage measured is 300mV grater than the previous voltage measured, the LSI judges it as a fire in the oven cavity and switches off the relays to the power transformer, fan motor and convection motor. The LSI also stops counting down and closes the damper door so that no fresh air will enter the oven cavity. Please refer to the following section for a more detailed description.

Operation

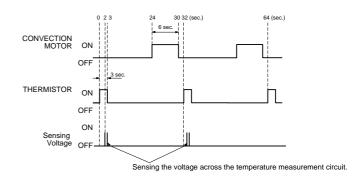
Please refer to the timing diagrams below.

- The thermistor operates within a 32-seconds time base and it is energized for three (3) seconds and off for 29 seconds. Two (2) seconds after the thermistor is energized, the voltage across the temperature measurement circuit is sampled by the LSI and twenty one (21) seconds after the thermistor is cut off the LSI turns on the cooling fan for six (6) seconds.
- 2. The above procedure is repeated. If the difference between the first voltage measured (in step 1) and the voltage measured when the procedure is repeated (step 2) is greater than 300mV the LSI makes the judgment that there is a fire in the oven cavity and will switch off the relays to the power transformer, fan motor and convection motor. The LSI also stops counting down and closes the damper door so that no fresh air will enter the oven cavity.

3. Once the fire sensor feature has shut the unit down, the programmed cooking cycle may be resumed by pressing the "START" pad or the unit may be reset by pressing the "CLEAR" pad.

IMPORTANT:

During sensor cooking operation, the fire sensing operation sequence will not begin until the AH sensor has detected vapours and initiated a sensor cooking cycle. This is because the operation of the convection fan would interfere with the AH sensor's vapour detection.



FUNCTION OF IMPORTANT COMPONENTS

UPPER AND LOWER LATCH SWITCHES

Those latch switches are mounted in the latch hooks as shown in figure. They are activated by the latch heads on the door.

When the door is opened, the switches interrupt the circuit to all components except CPU unit and relay unit and oven lamp. A cook cycle cannot take place until the door is firmly closed thereby activating both interlock switches.

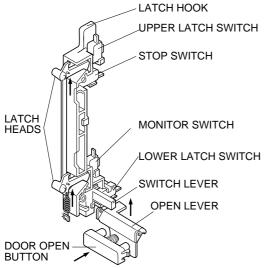


Figure D-1. Switches

MONITOR SWITCH

The monitor switch is mounted on the latch hook. It is activated (the contacts opened) by the lower latch head when the door is closed. The switch is intended to render the oven inoperative by means of blowning the fuse when the contacts of the common and normal open contacts of upper latch switch and lower latch switch

fail to open when the door is opened.

Functions:

- When the door is opened, the monitor switch contacts close (to the ON condition) due to their being normally closed. At this time the common and normal open contacts of upper latch switch and lower latch switch are in the OFF condition (contacts open) due to their being normally open contacts switch.
- As the door goes to a closed position, the monitor switch contacts are first opened and then the common and normal open contacts of upper latch switch close. (On

- opening the door, each of these switches operate inversely.)
- 3 If the door is opened during cooking, and the common and normal open contacts of upper latch switch and lower latch switch fail to open, the fuse blows simultaneously with closing of the monitor switch contacts.

CAUTION: BEFORE REPLACING A BLOWN FUSE TEST THE UPPER LATCH SWITCH, LOWER LATCH SWITCH AND MONITOR SWITCH FOR PROPER OPERATION. (REFER TO CHAPTER "TEST PROCEDURE").

STOP SWITCH

The stop switch is activated by the latch head. When the door is opened while the oven is in cook cycle, the stop switch contacts open to de-energize the relay (RY-1,RY-2,RY-3,RY-5,RY-6). Then the cook cycle is stopped.

THERMAL CUT-OUT 150°C (OVEN)

The oven thermal cut-out located on the left side of the thermal protection plate is designed to prevent damage to the convection heater unit if an overheated condition develops in the tube due to cooling fan failure, obstructed air ducts, dirty or blocked air intake, etc. Under normal operation, the oven thermal cut-out remains closed. However, when abnormally high temperatures are reached within the heater unit, the oven thermal cut-out will open, causing the oven to shut down. When the oven has cooled temperature, the oven thermal cut-out closes.

THERMAL CUT-OUT 95°C (FAN MOTOR)

The thermal cut-out protect the fan motor against overheating. If its temperature goes up higher than 95°C because the fan motor is locked or the ventilation operating are blocked, the contacts of the thermal cut-out will open and switch off the oven. When the thermal cut-out cools itself down to 75°C, the contacts of the thermal cut-out will close again.

TEMPERATURE FUSE 150°C (MG)

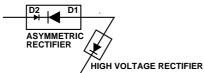
This fuse protects the magnetron against overheating. If the temperature goes up higher than 150°C because the fan motor is interrupted, the air inlet duct is blocked or the ventilation openings are obstructed, the fuse blows and cuts off the power supplying to the power transformer. The defective fuse must be replaced with new rated one.

FUSE M8A 250V

- If the wire harness or electrical components are shortcircuited, this fuse blows to prevent an electric shock or fire hazard.
- 2. The fuse also blows when upper latch switch and lower latch switch remain closed with the oven door open and when the monitor switch closes.
- The fuse M8A also blows when asymmetric rectifier, H.V. rectifier, H.V. wire harness, H.V. capacitor, magnetron or secondary winding of power transformer is shorted.

ASYMMETRIC RECTIFIER

The asymmetric rectifier is a solid state device that prevents current flow ins both directions. And it prevents the temperature rise of the power transformer by blowing the fuse M8A when the high voltage rectifier is shorted.



The rated peak reverse voltage of D1 of the asymmetric rectifier is 6 KV The rated peak reverse voltage of D2 of the asymmetric rectifier is 1.7 KV. D1 and D2 of the asymmetric rectifier or high voltage rectifier are shorted when the each peak reverse voltage goes beyond the each rated peak reverse voltage. (The process of blowing the fuse M8A.)

- 1. The high voltage rectifier is shorted by any causes when microwave cooking.
- The peak reverse voltage of D2 of the rectifier goes beyond the rated peak reverse voltage 1.7 KV in the voltagedoubler circuit.
- 3. D2 of the rectifier is shorted.
- 4. The large electric currents flow through the high voltage winding of the power transformer.
- 5. The large electric currents beyond 8A flow through the primary winding of the power transformer.
- 6. The fuse M8A blows by the large electric currents.
- 7. The power supply to the power transformer is cut off.

THERMISTOR

The thermistor is a negative temperature coefficient type. The temperature in the oven cavity is detected through the resistance of the thermistor, and then the control unit causes the heating element relay to operate, thus the current to the heating element is turned ON/OFF.

MONITOR RESISTOR

The monitor resistor prevents the fuse M8A 250V bursting when the fuse M8A 250V blows due to the operation of the monitor switch.

TURNTABLE MOTOR

The turntable motor drives the turntable supporting plate to rotate the turntable.

CONVECTION MOTOR

The convection motor drives the convection fan and provides the heated air.

FAN MOTOR

The fan motor drives a blade which draws external cool air. This cool air is directed through the air vanes surrounding the magnetron and cools the magnetron. This air is channelled through the oven cavity to remove steam and vapours given off from the heating foods. It is then exhausted through the exhausting air vents at the oven cavity.

CONVECTION HEATER

The convection heater is located at the rear of the oven cavity. It is intended to heat air driven by the convection fan. The heated air is kept in the oven and force-circulated and reheated by the convection heater.

CONVECTION COOKING SYSTEM

This oven is designed with a hot air heating system where food is not directly heated by the convection heater, but is heated by forced circulation of the hot air produced by the convection heater. The air heated by the convection heater is circulated through the convection passage provided on the outer casing of the oven cavity by means of the convection fan which is driven by the convection motor. It then enters the inside of the oven through the vent holes provided on the left side of the oven. Next, the hot air heats the food on the turntable and leaves the oven cavity through the vent in the oven cavity left side wall. Without leaving the oven, this hot air is reheated by the convection heater, passes through the convection passage and enters the inside of the oven cavity again, in a continuing cycle. In this way, the hot air circulates inside the oven cavity to raise its temperature and, at the same time, comes into contact with the food being cooked. When the temperature inside the oven cavity reaches the selected temperature, the convection heater is de-energized. When the temperature inside the oven cavity drops below the selected temperature, the convection heater is energized again. In this way, the inside of the oven cavity is maintained at approximately the selected temperature. When the convection time reaches 0, the convection heater is de-energized and the convection fan stops operating and the oven shuts off. Upon completion of the cooking time, the audible signal will sound, and oven lamp, turntable motor, cooling fan motor and convection motor are de-energized. At the end of the convection cycle, if the cavity air temperature is above 116°C, the circuit to RY6 will be maintained (by the thermistor circuit) to continue operation of the cooling fan motor until the temperature drops below 116°C, at which time the relay will be de-energized, turning off the fan motor. Relay RY5 will however, open as soon as the convection cycle has ended, turning off the convection fan motor. This will now cool and allow the damper door to open.

DAMPER OPEN-CLOSE MECHANISM

Usually, the damper is in the open position except during convection cooking.

Damper position is set automatically by damper motor, damper switch, motor cam and damper shaft.

These components are operated by a signal that judges if microwave cooking or convection cooking operation is selected by the CPU unit.

Microwave Cooking:

Damper is in the open position, because a portion of cooling air is channelled through the cavity to remove steam and vapours given off from the heating foods.

It is then exhausted at the top of the oven cavity into a condensation compartment.

Convection Cooking:

Damper is in the closed position, so that no hot air will be allowed to leak out the oven cavity.

Damper Operation

- 1. When power supply cord is plugged in:
- 1-1. When power supply cord is plugged in, a signal is sensed in the control unit, and operates shut-off relay (RY4).
- 1-2. Contacts of shut-off relay (RY4) close, the damper motor is energized, opening the damper door.
- 1-3. When the damper is moved to the open position by the damper cam, damper switch is closed (ON position).
- 1-4. The signal of damper switch is re-sensed in the control unit and shut-off relay (RY4) is turned off.
- 1-5. The 240 volts A.C. to the damper motor is stopped and the motor turns off.
- 2. When oven is microwave cooking: Damper is in the open position
- 3. When oven is convection cooking:
- 3-1 Damper motor is energized by touching the convection, temperature and START pads.
- 3-2. When damper is in the closed position (damper switch is OFF), its signal is sensed by the control unit, and shut-off relay (RY4) is de-energized.
- 3-3. The damper is held in the closed position during the convection cooking operation.

3-4. At the end of the convection cooking, shut-off relay (RY4) is energized, and the damper is returned to the open position.

NOTE: If the damper door is not in the proper position, closed during convection or open during microwave, the control unit will stop oven operation after 1 minute.

Cooking Mode	Operation of Damper
Microwave cooking	OPEN
Convection cooking	CLOSE
Sensor cooking	OPEN
Automatic mix cooking	CLOSE
Grill cooking	CLOSE
Slow cooking	CLOSE

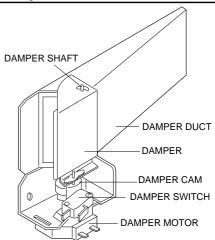


Figure D-2. Damper Mechanism

SERVICING

WARNING TO SERVICE PERSONNEL

Microwave ovens contain circuitry capable of producing very high voltage and current, contact with any part of the high voltage circuit will result in electrocution. High voltage capacitor, Power transformer, Magnetron, High voltage rectifier assembly, High voltage harness.

REMEMBER TO CHECK 3D

- 1) Disconnect the supply.
- 2) Door opened, and wedged open.
- 3) Discharge high voltage capacitor.

WARNING: AGAINST THE CHARGE OF THE HIGH-VOLTAGE CAPACITOR

The high-voltage capacitor remains charged about 60 seconds after the oven has been switched off. Wait for 60 seconds and then short-circuit the connection of the high-voltage capacitor (that is, of the connecting lead of the high-voltage rectifier) against the chassis with the use of an insulated screwdriver.

Sharp recommend that wherever possible fault-finding is carried out with the supply disconnected. It may in, some cases, be necessary to connect the supply after the outer case has been removed, in this event carry out <u>3D</u> checks and then disconnect the leads to the primary of the power transformer. Ensure that these leads remain isolated from other components and the oven chassis. (Use insulation tape if necessary.) When the testing is completed carry out <u>3D</u> checks and reconnect the leads to the primary of the power transformer.

REMEMBER TO CHECK 4R

- 1) Reconnect all leads removed from components during testing.
- 2) Replace the outer case (cabinet).
- 3) Reconnect the supply.
- 4) Run the oven. Check all functions.

Microwave ovens should not be run empty. To test for the presence of microwave energy within a cavity, place a cup of cold water on the oven turntable, close the door and set the microwave timer for two (2) minutes. Set the power level to HIGH and push the START button. When the two minutes has elapsed (timer at zero) carefully check that the water is now hot. If the water remains cold carry out $\underline{3D}$ checks and re-examine the connections to the component being tested.

When all service work is completed, and the oven is fully assembled, the microwave power output should be checked and microwave leakage test carried out

TROUBLESHOOTING GUIDE

When troubleshooting the microwave oven, it is helpful to follow the Sequence of Operation in performing the checks. Many of the possible causes of trouble will require that a specific test be performed. These tests are given a procedure letter which will be found in the "Test Procedure "section.

IMPORTANT: If the oven becomes inoperative because of a blown fuse M8A in the upper latch switch - lower latch switch - monitor switch - monitor resistor circuit, check the upper latch switch, lower latch switch, monitor switch and monitor resistor before replacing the fuse M8A.

CK = Check / RE = Replace

	TEST PROCEDURE	Α	В	С	D	Е	E	E	F	G	G	Н	I	J	J	J	J	K	L	М	N											RE
	POSSIBLE CAUSE	T				\dashv	\dagger	\dagger	+		1																				+	\top
	AND DEFECTIVE PARTS																													SNES	إ	Д
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		ETRO	Z TR	ECTIF	OLT,	AND	OR S	S 2		RAT	JAL J		1ISTC	OTO	ABL	SCTIC	R M	OR R	힝	È	(R	(RY-	(RY-	(R	(RY-	(RY-	ATEF	NSO	LAMF	D OR		OWE FD F
CONDITION	PROBLEM	MAGNETRON	POWER TRANSFORMER	H.V. RECTIFIER ASSEMBLY	HIGH VOLTAGE CAPACITOR	LATCH AND STOP SWITCHES	MONITOR SWITCH	DAMPER SWITCH	MAIN FUSE	TEMPERATURE FUSE 150°C	N N	CONVECTION HEATER	THERMISTOR	FAN MOTOR	TURNTABLE MOTOR	CONVECTION MOTOR	DAMPER MOTOR	MONITOR RESISTOR	TOUCH CONTROL PANEL	KEY UNIT	RELAY (RY-1)	RELAY (RY-2)	RELAY	RELAY (RY-4)	RELAY (RY-5)	RELAY (RY-6)	FOIL PATERN	AH. SENSOR	OVEN LAMP OR	OPENED OR SHORTED WIRE HARNESS	WALL OUTLET	LOW POWER SUPPLY VOLTAGE SHORTED POWER CORD
	Home fuse blows when power supply cord is plugged into wall outlet.																															0
	Fuse M8A blows when power cord is plugged into wall outlet.					()																							0		
OFF CONDITION	88:88 does not appear in display when power cord is first plugged into wall outlet.								20	00	5								0						0		0			0	0	
	Display does not operate properly when STOP/CLEAR pad is touched. (The time of day should appear on the display with beep sound during normal condition.)				1	0													0	0										0		
	Oven lamp does not light with door opened.					0)(0	>								0		0								0	0		
	Oven lamp does not light at all										_										0								0	0		\perp
COOKING	Oven lamp light, but turntable motor does not operate.					0									0				0											0		
CONDITION	Cooling fan motor does not operate.												•	0					0							0				0		
	The oven stops after1 minute	L					_(<u>)</u>	4		4	4		_			9							0						0	_	+
	Oven does not go into a cook cycle, when START pad is touched.				ı	0													0	0										0		
(MICROWAVE)	Low or no power is produced during microwave cooking (The food is heated incompletely or not heated at all)		0	0	0														0			0								0		
	Extremely uneven heating is produced in oven load (food).														0						0									0		
	Function of variable cooking does not operate properly except HIGH power.																		0	0												
	CONV indicator lights, but heating element does not heat.											0	0						0				0							0)
(CONVECTION)	Temperature in the oven cavity is lower or higher than preset.										()	0			0			0				0	0	0					0		>
	Convection cycle runs 1 minute then the oven shuts down.)									0		0					0						0		
	Convection cycle runs 3 minutes then the oven shuts down.							\downarrow				_(0																			
(AH. SENSOR)	Oven is in the sensor cooking condition but AH sensor does not end 1st. stage or does not stop cooking cycle or the oven stops soon.																		0									0		0		

TEST PROCEDURES

PROCEDURE LETTER

COMPONENT TEST

A MAGNETRON TEST

NEVER TOUCH ANY PART IN THE CIRCUIT WITH YOUR HAND OR AN INSULATED TOOL WHILE THE OVEN IS IN OPERATION.

CARRY OUT 3D CHECK.

Isolate the magnetron from high voltage circuit by removing all leads connected to filament terminal.

To test for an open circuit filament use an ohmmeter to make a continuity test between the magnetron filament terminals, the meter should show a reading of less than 1 ohm.

To test for short filament to anode condition, connect ohmmeter between one of the filament terminals and the case of the magnetron (ground). This test should be indicated an infinite resistance. If a low or zero resistance reading is obtained then the magnetron should be replaced.

MICROWAVE OUTPUT POWER (1 Litre water load)

The following test procedure should be carried out with the microwave oven in a fully assembled condition (outer case fitted). Microwave output power from the magnetron can be measured by way of IEC 705, i.e. it can be measured by using water load how much it can be absorbed by the water load. To measure the microwave output power in the microwave oven, the relation of calorie and watt is used. When P(W) heating works for t(second), approximately P x t/4.187 calorie is generated. On the other hand, if the temperature of the water with V(ml) rises ΔT (°C) during this microwave heating period, the calorie of the water is V x ΔT .

```
The formula is as follows; P \times t / 4.187 = V \times \Delta T \qquad P (W) = 4.187 \times V \times \Delta T / t Our condition for water load is as follows: Room \ temperature......around \ 20^{\circ}C \qquad Power \ supply \ Voltage......Rated \ voltage \ Water \ load.......1000 \ g \qquad Initial \ temperature.......10 \pm 2^{\circ}C \qquad Heating \ time.......49 \ sec. P = 85 \times \Delta T
```

Measuring condition:

1. Container

The water container must be a cylindrical borosilicate glass vessel having a maximum material thickness of 3 mm and an outside diameter of approximately 190 mm.

- 2. Temperature of the oven and vessel
 - The oven and the empty vessel are at ambient temperature prior to the start the test.
- 3. Temperature of the water
 - The initial temperature of the water is (10±2)°C.
- 4. Select the initial and final water temperature so that the maximum difference between the final water temperature and the ambient temperature is 5°C.
- 5. Select stirring devices and measuring instruments in order to minimize addition or removal of heat.
- 6. The graduation of the thermometer must be scaled by 0.1°C at minimum and accurate thermometer.
- 7. The water load must be (1000±5) g.
- 8. "t" is measured while the microwave generator is operating at full power. Magnetron filament heatup time is not included.

NOTE: The operation time of the microwave oven is "t + 2" sec. 2 sec. is magnetron filament heat-up time.

Measuring method:

- 1. Measure the initial temperature of the water before the water is added to the vessel. (Example: The initial temperature $T1 = 11^{\circ}C$)
- 2. Add the 1 litre water to the vessel.
- 3. Place the load on the centre of the shelf.
- 4. Operate the microwave oven at HIGH for the temperature of the water rises by a value Δ T of $(10 \pm 2)^{\circ}$ C.
- 5. Stir the water to equalize temperature throughout the vessel.

TEST PROCEDURES

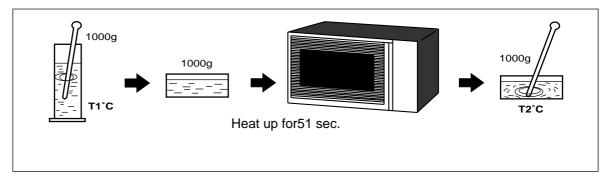
PROCEDURE LETTER

COMPONENT TEST

- 6. Measure the final water temperature. (Example: The final temperature $T2 = 21^{\circ}C$)
- 7. Calculate the microwave power output P in watts from above formula.

JUDGMENT: The measured output power should be at least \pm 15 % of the rated output power.

CAUTION: 1°C CORRESPONDS TO 85 WATTS REPEAT MEASUREMENT IF THE POWER IS INSUFFICIENT.



MICROWAVE OUTPUT POWER (2 Litre water load)

The following test procedure should be carried out with the microwave oven in a fully assembled condition (with outer case fitted).

Microwave output power from the magnetron can be measured by way of substitution, i.e. it can be measured by using a water load how much it can be absorbed by the water load. To measure the microwave output power in the microwave oven, the relation of calorie and watt is used.

On the other hand, if the temperature of the water with V(ml) rises ΔT (°C) during this microwave heating period, the calorie of the water is V x ΔT .

The formula is as follows:

 $P = 8330 \times \Delta T / t$

Our condition for water load is as follows:

Room temperature......23±2°C Power supply Voltage......240 volts.

Water load.......2000 ml Initial temperature.........23±1°C Heating time .1 min. 51sec.

 $P = 75 \times \Delta T$

Measuring method:

A) The two water containers must be prepared.

The water container must be one (1) litre beaker made of Pyrex glass and its diameter approximately 12cm.

- B) Put the one (1) litre water into each beaker (Each beaker has one litre water). The initial temperature of the water should be 23±1°C.
- C) Mark T1 on the one beaker and mark T2 on the other one. And stir the water and measure the temperature of water the thermometer and note them. The graduation of the thermometer must be scaled by 0.1°C at minimum and an accurate mercury thermometer is recommended.
- D) Place the two (2) beakers as touching each other in the centre of the oven cavity.
- E) Set the timer to 2 minutes and 20 seconds, start the oven at 100% power.
- F) The time must be measured with stopwatch or wristwatch.
- G) After 1 minutes and 51 seconds, stop the oven by opening the door.
- H) Put the two (2) beakers out of the oven cavity and measure the temperature of the water by stirring the water with thermometer and note them.

PROCEDURE LETTER

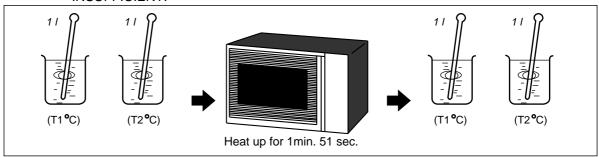
COMPONENT TEST

Example

Initial temperature	$T1 = 33^{\circ}C$ $T2 = 34^{\circ}C$ $\Delta T1 = 10^{\circ}C$ $\Delta T2 = 10^{\circ}C$ $\Delta T2$ / 2 = (10°C+10°C) / 2 = 10°C
The equation is P= 75 x ΔT	P= 75 x 10°C = 750 Watts

NOTE: The measured output power should be at least \pm 15 % of the rated output power.

CAUTION: 1°C CORRESPONDS TO 75 WATTS. REPEAT MEASUREMENT IF THE POWER IS INSUFFICIENT.



B POWER TRANSFORMER TEST

WARNING: High voltages and large currents are present at the secondary winding and filament winding of the power transformer. It is very dangerous to work near this part when the oven is on. NEVER make any voltage measurements of the high-voltage circuits, including the magnetron filament.

CARRY OUT 3D CHECKS.

Disconnect the leads to the primary winding of the power transformer. Disconnect the filament and secondary winding connections from the rest of the HV circuitry. Using an ohmmeter, set on a low range, it is possible to check the continuity of all three windings. The following readings should be obtained:

- a. Primary winding approx. 1.3 Ω
- b. Secondary winding approx. 72 Ω
- c. Filament winding less than 1Ω

If the reading obtained are not stated as above, then the power transformer is probably faulty and should be replaced.

CARRY OUT 4R CHECKS.

C HIGH VOLTAGE RECTIFIER ASSEMBLY TEST

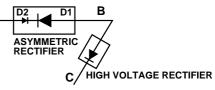
HIGH VOLTAGE RECTIFIER TEST

CARRY OUT 3D CHECKS.

Isolate the high voltage rectifier assembly from the HV circuit. The high voltage rectifier can be tested using an ohmmeter set to its highest range. Connect the ohmmeter across the terminal B+C of the high voltage rectifier and note the reading obtained. Reverse the meter leads and note this second reading.

The normal resistance is infinite in one direction and more than 100 $k\Omega$ in the other direction.

CARRY OUT 4R CHECKS.



PROCEDURE LETTER

COMPONENT TEST

ASYMMETRIC RECTIFIER TEST

CARRY OUT 3D CHECKS.

Isolate the high voltage rectifier assembly from the HV circuit. The asymmetric can be tested using an ohmmeter set to its highest range across the terminals A+B of the asymmetric rectifier and note the reading obtained. Reverse the meter leads and note this second reading. If an open circuit is indicated in both direction then the asymmetric rectifier is good. If an asymmetric rectifier is shorted in either direction, then the asymmetric rectifier is probably faulty and must be replaced with high voltage rectifier. When the asymmetric rectifier is defective, check whether magnetron, high voltage rectifier, high voltage wire or filament winding of the power transformer is shorted.

CARRY OUT 4R CHECKS.

NOTE: FOR MEASUREMENT OF THE RESISTANCE OF THE RECTIFIER, THE BATTERIES OF THE MEASURING INSTRUMENT MUST HAVE A VOLTAGE AT LEAST 6 VOLTS, BECAUSE OTHERWISE AN INFINITE RESISTANCE MIGHT BE SHOWN IN BOTH DIRECTIONS.

D HIGH VOLTAGE CAPACITOR TEST

CARRY OUT 3D CHECKS.

- A. Isolate the high voltage capacitor from the circuit.
- B. Continuity check must be carried out with measuring instrument which is set to the highest resistance range.
- C. A normal capacitor shows continuity for a short time (kick) and then a resistance of about $10M\Omega$ after it has been charged.
- D. A short-circuited capacitor shows continuity all the time.
- E. An open capacitor constantly shows a resistance about 10 M Ω because of its internal 10M Ω resistance.
- F. When the internal wire is opened in the high voltage capacitor shows an infinite resistance.
- G. The resistance across all the terminals and the chassis must be infinite when the capacitor is normal. If incorrect reading are obtained, the high voltage capacitor must be replaced.

CARRY OUT <u>4R</u> CHECKS.

E <u>SWITCH TEST</u>

CARRY OUT 3D CHECKS.

Isolate the switch to be tested and using an ohmmeter check between the terminals as described in the following table.

COM: Common terminal

Table: Terminal Connection of Switch

Plunger Operation	COM to NO	COM to NC
Released	O.C.	S.C.
Depressed	S.C.	O.C.

NO; Normally open terminal NC: Normally close terminal

S.C.; Short circuit O.C.; Open circuit

If incorrect readings are obtained, make the necessary switch adjustment or replace the switch.

CARRY OUT 4R CHECKS.

F BLOWN FUSE F M8A

CARRY OUT 3D CHECKS.

- 1. If the fuse M8A is blown, there could be shorts or grounds in electrical parts or wire harness. Check them and replace the defective parts or repair the wire harness.
- 2. If the fuse M8A is blown when the door is opened, check the upper latch switch, lower latch switch, monitor switch and monitor resistor.

If the fuse M8A is blown by incorrect door switching, replace the defective switch(s) and the fuse M8A.

3. If the fuse M8A is blown, there could be short in the asymmetric rectifier or there is a ground in wire harness. A short in the asymmetric rectifier may have occured due to short or ground in H.V. rectifier, magnetron, power transformer or H.V. wire. Check them and replace the defective parts or repair the wire harness.

CARRY OUT 4R CHECKS.

CAUTION: Only replace fuse with the correct value replacement.

PROCEDURE LETTER

COMPONENT TEST

G TEMPERATURE FUSE AND THERMAL CUT-OUT TEST

CARRY OUT 3D CHECKS.

Disconnect the leads from the terminals of the temp. fuse or thermal cut-out. Then using an ohmmeter, make a continuity test across the two terminals as described in the table below.

CARRY OUT 4R CHECKS.

Table: Temperature Fuse and Thermal cut-out Test

Parts Name	Temperature of "ON" condition (closed circuit) (°C)	Temperature of "OFF" condition (open circuit) (°C)	Indication ofohmmeter (When room temperature is approx. 20°C)
Temp. fuse 150°C	This is not resetable type.	Above 150 °C	Closed circuit
Thermal cut-out 150°C	Below 130°C	Above 150°C	Closed circuit.
Thermal cut-out 95°C	Below 75°C	Above 95°C	Closed circuit.

If incorrect readings are obtained, replace the temp. fuse or thermal cut-out.;

An open circuit temperature fuse 150°C (MG) indicates that the magnetron has overheated, this may be due to resistricted ventilation, cooling fan failure or a fault condition within the magnetron or HV circuit.

An open circuit thermal cut-out 150°C (OVEN) indicates that the convection motor has over heated, this may be due to convection motor locked.

An open circuit thermal cut-out 95°C (FM) indicates that the fan motor winding has overheated, this may be due to blocked ventilation or locked cooling fan.

H CONVECTION HEATER TEST

CARRY OUT 3D CHECKS.

Before carring out the following tests make sure the heater is fully cool.

1. Resistance of heater

Disconnect the wire leads to the heater to be tested. Using ohmmeter with low resistance range. Check the resistance across the terminals of the heater.

The resistance of heater is approximately 37.5 ohms.

2. Insulation resistance

Disconnect the wire leads to the heater to be tested. Check the insulation resistance between the element and cavity using a 500V - 100Mohms insulation tester. The insulation resistance should be more than 10Mohms in the cold start.

If the results of above test 1 and/or 2 are out of above specifications, the heater is probably faulty and should be replaced.

CARRY OUT 4R CHECKS.

I THERMISTOR TEST

CARRY OUT 3D CHECKS.

Disconnect connector-E from the CPU unit. Measure the resistance of the thermistor with an ohmmeter. Connect the ohmmeter leads to Pin No's E-3 and E-4 of the thermistor harness.

If the meter does not indicate above resistance, replace the thermistor.

CARRY OUT 4R CHECKS.

J MOTOR WINDING TEST

CARRY OUT 3D CHECKS.

PROCEDURE LETTER

COMPONENT TEST

Disconnect the leads from the motor.

Using an ohmmeter, check the resistance between the two terminals as described in the table below.

Table: Resistance of Motor

Motors	Resistance
Fan motor	Approximately 295 Ω
Turntable motor	Approximately 10.5 kΩ
Convection fan motor	Approximately 210 Ω
Damper motor	Approximately 11 kΩ

If incorrect readings are obtained, replace the motor.

CARRY OUT 4R CHECKS.

K MONITOR RESISTOR TEST

CARRY OUT 3D CHECKS.

Disconnect the leads from the monitor resist. Using an ohmmeter and set on a low range. Check between the terminals of the monitor resistor.

The resistance of monitor resistor is approx. 0.8 ohms.

If incorrect readings are obtained, replace the monitor resistor.

CARRY OUT 4R CHECKS.

L TOUCH CONTROL PANEL ASSEMBLY TEST

The touch control panel consists of circuits including semiconductors such as LSI, ICs, etc. Therefore, unlike conventional microwave ovens, proper maintenance cannot be performed with only a voltmeter and ohmmeter. In this service manual, the touch control panel assembly is divided into two units, Control Unit and Key Unit and troubleshooting by unit replacement is described according to the symptoms indicated.

- 1. Key Unit. Note: Check key unit ribbon connection before replacement.
 - The following symptoms indicate a defective key unit. Replace the key unit.
 - a) When touching the pads, a certain pad produces no signal at all.
 - b) When touching a number pad, two figures or more are displayed.
 - c) When touching the pads, sometimes a pad produces no signal.
- 2. Control Unit.

The following symptoms indicate a defective control unit. Replacethe control unit.

- 2-1 In connection with pads.
 - a) When touching the pads, a certain group of pads do not produce a signal.
 - b) When touching the pads, no pads produce a signal.
- 2-2 In connection with indicators.
 - a) At a certain digit, all or some segments do not light up.
 - b) At a certain digit, brightness is low.
 - c) Only one indicator does not light.
 - d) The corresponding segments of all digits do not light up; or they continue to light up.
 - e) Wrong figure appears.
 - f) A certain group of indicators do not light up.
 - g) The figure of all digits flicker.
- 2-3 Other possible troubles caused by defective control unit.
 - a) Buzzer does not sound or continues to sound.
 - b) Clock does not operate properly.
 - c) Cooking is not possible.
 - d) Proper temperature measurement is not obtained.

PROCEDURE LETTER

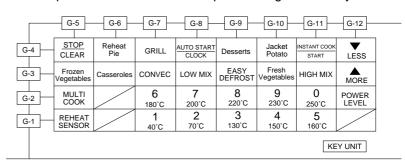
COMPONENT TEST

M KEY UNIT TEST

If the display fails to clear when the STOP/CLEAR pad is depressed, first verify the flat ribbon is making good contact, verify that the door sensing switch (stop switch) operates properly; that is the contacts are closed when the door is closed and open when the door is open.

If the door sensing switch (stop switch) is good, disconnect the flat ribbon that connects the key unit to the control unit and make sure the door sensing switch is closed (either close the door or short the door sensing switch connector). Use the key unit matrix indicated on the control panel schematic and place a jumper wire between the pins that correspond to the STOP/CLEAR pad making momentary contact.

If the control unit responds by clearing with a beep the key unit is faulty and must be replaced. If the control unit does not respond, it is faulty and must be replaced. If a specific pad does not respond, the above method may be used (after clearing the control unit) to determine if the control unit or key pad is at fault.



N RELAY TEST

emove the outer case and check voltage between Pin Nos. 7 and 9 of the 9-pin connector (A) on the control unit with an A.C. voltmeter. The meter should indicate 240 volts, if not check oven circuit.

Shut-off, Cook and Heater Relay Test

These relays are operated by D.C. voltage.

Check voltage at the relay coil with a D.C. voltmeter during the microwave cooking operation or convection cooking operation.

DC. voltage indicated Defective relay.

DC. voltage not indicated Check diode which is connected to the relay coil. If diode is good, control unit is defective.

RELAY SYMBOL	OPERATIONAL VOLTAGE	CONNECTED COMPONENTS
RY1	Approx. 19.0 V.D.C.	Oven lamp/Turntable motor
RY2(COOK)	Approx. 18.0 V.D.C.	Power transformer
RY3(HEATER)	Approx. 18.0 V.D.C.	Heating element
RY4	Approx. 19.0 V.D.C.	Damper motor
RY5	Approx. 19.0V.D.C.	Convection motor
RY6	Approx. 19.0 V.D.C.	Cooling fan motor

O PROCEDURES TO BE TAKEN WHEN THE FOIL PATTERN ON THE PRINTED WIRING BOARD (PWB) IS OPEN.

To protect the electronic circuits, this model is provided with a fine foil pattern added to the primary on the PWB, this foil pattern acts as a fuse. If the foil pattern is open, follow the troubleshooting guide given below for repair.

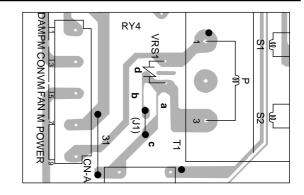
STEPS	OCCURANCE	CAUSE OR CORRECTION
1	The rated voltage is not applied to POWER terminal of CPU connector (CN-A)	Check supply voltage and oven power cord.
2	The rated voltage is applied to primary side of power transformer.	Power transformer or secondary circuit defective. Check and repair.
3	Only pattern at "a" is broken.	*Insert jumper wire J1 and solder.
4	Pattern at "a" and "b" are broken.	*Insert the coil RCILF2003YAZZ between "c" and "d".

PROCEDURE LETTER

COMPONENT TEST

Problem: POWER ON, indicator does not light up.

NOTE: *At the time of making these repairs, make a visual inspection of the varistor. check for burned damage and examine the transformer with an ohmmeter for the presence of layer short-circuit (check primary coil resistance). If any abnormal condition is detected, replace the defective parts.



P AH SENSOR TEST

Checking the initial sensor cooking condition

- (1) The oven should be plugged in at least five minutes before sensor cooking.
- (2) Room temperature should not exceed 35°C.
- (3) The unit should not be installed in any area where heat and steam are generated. The unit should not be installed, for example, next to a conventional surface unit. Refer to the "INSTALLATION Instructions".
- (4) Exhaust vents are provided on the back of the unit for proper cooling and air flow in the cavity. To permit adequate ventilation, be sure to install so as not to block these vents. There should be some space for air circulation.
- (5) Be sure the exterior of the cooking container and the interior of the oven are dry. Wipe off any moisture with a dry cloth or paper towel.
- (6) The Sensor works with food at normal storage temperature. For example, chicken pieces would be at refrigerator temperature and canned soup at room temperature.
- (7) Avoid using aerosol sprays or cleaning solvents near the oven while using Sensor settings. The sensor will detect the vapor given of by the spray and turn off before food is properly cooked.
- (8) After the oven is started on sensor cooking condition, if the sensor has not detected the vapor of the food, ERROR will appear and the oven will shut off.

Water load cooking test

Make sure the oven has been plugged in at least five minutes before checking sensor cook operation. The cabinet should be installed and screws tightened.

- (1) Fill approximately 200 milliliters (7.2 oz) of tap water in a 1000 milliliter measuring cup.
- (2) Place the container on the center of tray in the oven cavity.
- (3) Close the door.
- (4) Touch REHEAT SENSOR pad twice. Now, the oven is in the sensor cooking condition and "MENU2" will appear in the display.
- (5) The oven will operate for the first 16 seconds, without generating microwave energy.

When the AH sensor is defective (open or short), ERROR will appear in the display after 16 seconds cleaning time.

If ERROR appears check sensor wire connections and/or AH sensor.

NOTE: ERROR will appear if the door is opend or STOP/CLEAR pad is touched during first stage of sensor cooking.

(6) After approximately 16 seconds, microwave energy is produced, oven should turn off after water is boiling (bubling).

If the oven does not turn off, replace the AH sensor or check the control unit, refer to explanation below.

TESTING METHOD FOR AH SENSOR AND/OR CONTROL UNIT

To determine if the sensor is defective, the simplest method is to replace it with a new replacement sensor.

- (1) Disconnect oven from power supply and remove outer case.
- (2) Discharge the high voltage capacitor.

PROCEDURE
LETTER

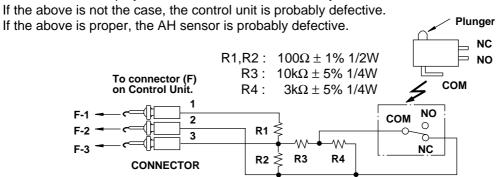
COMPONENT TEST

- (3) Remove the AH sensor.
- (4) Install the new AH sensor.
- (5) Re-install the outer case.
- (6) Reconnect the oven to the power supply and check the sensor cook operation, proceed as follows:
 - 6-1. Fill approximately 200 milliliters (7.2 oz) of tap water in a 1000 milliliter measuring cup.
 - 6-2. Place the container on the center of tray in the oven cavity.
 - 6-3. Close the door.
 - 6-4. Touch REHEAT SENSOR pad twice.
 - 6-5. The control panel is in automatic Sensor operation.
 - 6-6. The oven will turn off automatically after the water is boiling (bubling).

If new sensor dose not operate properly, the problem is with the control unit.

CHECKING CONTROL UNIT

- (1) Disconnect oven from power supply and remove outer case.
- (2) Discharge the high voltage capacitor.
- (3) Disconnect the wire leads from the cook relay.
- (4) Disconnect the sensor connector that is mounted to lower portion of control panel.
- (5) Then connect the dummy resistor circuit (see fig.) to the sensor connector of control panel.
- (6) Reconnect the oven to the power supply and check the sensor cook operation, proceed as follows:
 - 6-1. Touch REHEAT SENSOR pad twice.
 - 6-2. The control panel is in the sensor cooking operation.
 - 6-3. After approximately 20 seconds, push plunger of select switch. This condition is same as judgement by AH sensor.
 - 6-4. After approximately 3 seconds, cooking operation turns off, an audible signal will sound, and the display will then revert to the time of day.



Sensor Dummy Resistor Circuit

TOUCH CONTROL PANEL ASSEMBLY

OUTLINE OF TOUCH CONTROL PANEL

The touch control section consists of the following units as shown in the touch control panel circuit.

(1) Key Unit

(2) Control Unit

The principal functions of these units and the signals communicated among them are explained below.

Key Unit

The key unit is composed of a matrix, signals generated in the LSI are sent to the key unit through P03, P05, P11, P12, P15, P16, P20 and P23. When a key pad is touched, a signal is completed through the key unit and passed back to the LSI through R24-R27 to perform the function that was requested.

Control Unit

Control unit consists of LSI, power source circuit, synchronizing signal circuit, ACL circuit, buzzer circuit, temperature measurement circuit, absolute humidity sensor circuit and indicator circuit.

1) LSI

This LSI controls the temperature measurement signal, AH sensor signal, key strobe signal, relay driving signal for oven function and indicator signal.

2) Power Source Circuit

This circuit generates the voltage necessary for the control unit from the AC line voltage.

3) Synchronizing Signal Circuit

The power source synchronizing signal is available in order to compose a basic standard time in the clock circuit. It incorporates a very small error because it works on commercial frequency.

4) ACL Circuit

A circuit to generate a signals which resetting the LSI to the initial state when power is applied.

5) Buzzer Circuit

The buzzer is responds to signals from the LSI to emit noticing sounds (key touch sound and completion sound).

6) Temperature Measurement Circuit: Oven

The temperature in the oven cavity is sensed by the thermistor. The variation of resistance according to sensed temperature is detected by the temperature measurement circuit and the result applied to LSI. The LSI uses this information to control the relay and display units.

7) Absolute Humidity Sensor Circuit

This circuit detects the humidity of a food which is being cooked, to control its automatic cooking.

8) Door Sensing Switch

A switch to inform the LSI if the door is open or closed.

9) Relay Circuit

To drive the magnetron, heating element, fan motor, convection motor, damper motor, turntable motor and light the oven lamp.

10) Indicator Circuit

Indicator element is a Fluorescent Display.

Basically, a Fluorescent Display is triode having a cathode, a grid and an anode. Usually, the cathode of a Fluorescent Display is directly heated and the filament serves as cathode.

The Fluorescent Display has 6-digits, 15-segments are used for displaying figures.

DESCRIPTION OF LSI

LSI(IZA589DR): The I/O signals of the LSI(IZA589DR) are detailed in the following table.

Pin No.	Signal	I/O	Description
1	VCC	IN	Connected to GND.
2	VEE	IN	Anode (segment) of Fluorescent Display light-up voltage: -28V. Vp voltage of power source circuit input.
3	AVSS	IN	Power source voltage: -5V. VC voltage of power source circuit input.
4	VREF	IN	Reference voltage input terminal. A reference voltage applied to the A/D converter in the LSI. Connected to GND.(0V)
5	AN7	IN	Used for initial balancing of the bridge circuit (absolute humidity sensor). This input is an analog input terminal from the AH sensor circuit, and connected to the A/D coverter built into the LSI.
6	AN6	IN	AH sensor input. This input is an analog input terminal from the AH sensor circuit, and connected to the A/D converter built into the LSI.
7-9	AN5-AN3	IN	Heating constant compensation terminal.
10	AN2	IN	Input signal which communicates the damper open/close information to LSI.
			Damper opened; "H" level signal(0V:GND). Damper closed; "L" level signal(-5V).
11	AN1	IN	Input signal which communicates the door open/close information to LSI.
			Door closed; "H" level signal(0V). Door opened; "L" level signal(-5V).
12	AN0	IN	Temperature measurement input: OVEN THERMISTOR. By inputting DC voltage corresponding to the temperature detected by the thermistor, this input is converted into temperature by the A/D converter built into the LSI.
13	P55	OUT	Magnetron high-voltage circuit driving signal.
			To turn on and off the cook relay(RY2). In HIGH operation, the signals holds "L" level during microwave cooking and "H" level while not cooking. In other cooking modes (MED HIGH, MED, MED LOW, LOW) the signal turns to "H" level and "L" level in repetition according to the power level. VARI MODE ON TIME HIGH (100% power) 32 sec. 0 sec. MED HIGH (approx. 70% power) 18 sec. MED LOW (approx. 30% power) 12 sec. 20 sec. LOW (approx. 10% power) 6 sec. 26 sec.
14	P54	OUT	Heating element driving signal. To turn on and off shut-off relay(RY3). "L" level during convection cooking; "H" level otherwise. During convection cooking, the signal becomes "H" level when the temperature of the oven cavity exceeds the predetermined temperature.
15	P53	OUT	Cooling fan motor driving signal. To turn on and off shut-off relay(RY6). "L" level during both microwave and convection cooking; "H" level otherwise.
16	P52	OUT	Convection motor driving signal. To turn on and off shut-off relay(RY5). "L" level during CONVECTION; "H" level otherwise.
17	P51	OUT	Damper motor relay driving signal.
			To turn on and off shut-off relay(RY4).
18	P50	OUT	Terminal not used.
19	P47	OUT	Oven lamp and turntable motor driving signal. (Square Waveform : 50Hz) To turn on and off the shut-off relay(RY1).

Pin No.	Signal	I/O	Description
	_		The square waveform voltage is delivered to the relay(RY1) driving circuit and relays(RY2,RY3,RY5) control circuit.
20-21	P46-P45	OUT	Terminal not used.
22	P44	OUT	Timing signal output terminal for temperature measurement(OVEN). "H" level (GND): Ttermistor OPEN timing. "L" level (-5V): Temperature measuring timing.(Convection cooking)
23	P43	OUT	Signal to sound buzzer. A: key touch sound. B: Completion sound. C: When the temperature of the oven cavity reaches the preset temperature in the preheating mode, or when the preheating hold time (30 minutes) is elapsed.
24	P42	OUT	Timing signal output terminal for temperature measurement(OVEN). "H" level (GND): Ttermistor OPEN timing. "L" level (-5V): Temperature measuring timing.(Convection cooking)
25	P41	IN	Signal to synchronize LSI with commercial power source frequency. This is the basic timing for all real time processing of LSI. H: GND L (-5V)
26	P40	IN	Connected to GND.
27	RST	IN	Auto clear terminal. Signal is input to reset the LSI to the initial state when power is applied. Temporarily set to "L" level the moment power is applied, at this time the LSI is reset. Thereafter set at "H" level.
28/29	XCIN/XCOUT	OUT	Terminal not used.
30	XIN	IN	Internal clock oscillation frequency setting input. The internal clock frequency is set by inserting the ceramic filter oscillation circuit with respect to XOUT terminal.
31	XOUT	OUT	Internal clock oscillation frequency control output. Output to control oscillation input of XIN.
32	VSS	IN	Power source voltage: -5V. VC voltage of power source circuit input.
33	P27	IN	Signal coming from touch key. When any one of G-1 line keys on key matrix is touched, a corresponding signal from P03,P05,P11,P12,P15,P16,P20 and P23 will be input into P27. When no key is touched, the signal is held at "L" level.
34	P26	IN	Signal similar to P27. When any one of G-2 line key on key matrix is touched, a corresponding signal will be input into P26.
35	P25	IN	Signal similar to P27. When any one of G-3 line key on key matrix is touched, a corresponding signal will be input into P25.
36	P24	IN	Signal similar to P27. When any one of G-4 line key on key matrix is touched, a corresponding signal will be input into P24.
37	P23	OUT	Segment data signals. The relation between signals and indicators are as follows: Signal Segment Signal Segment Signal Segment Signal Segment Parameter P35 P1 P03 P5 P12 P8 P20 P13 P36 P2 P04 P6 P13 P9 P21 P14 P00 P3 P05 P7 P15 P10 P23 P15 P01 P4 P11 P12 P16 P11

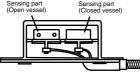
Pin No.	Signal	I/O	Description
			Key strobe signal. Signal applied to touch-key section. A pulse signal is input to P24-P27 terminal while one of G-5 line keys on key matrix is touched.
38	P22	OUT	Digit selection signal. The relationship between digit signal and digit are as follows; Digit signal P22
39	P21	OUT	Segment data signal. Signal similar to P23.
40	P20	OUT	Segment data signal. Signal similar to P23. Key strobe signal. Signal applied to touch-key section. A pulse signal is input to P24-P27 terminal while one of G-6 line keys on key matrix is touched.
41	P17	OUT	Digit selection signal. Signal similar to P22.
42	P16	OUT	Segment data signal. Signal similar to P23. Signal similar to P23. Key strobe signal. Signal applied to touch-key section. A pulse signal is input to P24-P27 terminal while one of G-7 line keys on key matrix is touched.
43	P15	OUT	Segment data signal. Key strobe signal. Signal applied to touch-key section. A pulse signal is input to P24-P27 terminal while one of G-8 line keys on key matrix is touched.
44	P14	OUT	<u>Digit selection signal.</u> Signal similar to P22.
45	P13	OUT	Segment data signal. Signal similar to P23.
46	P12	OUT	Segment data signal. Signal similar to P23. Key strobe signal. Signal applied to touch-key section. A pulse signal is input to P24-P27 terminal while one of G-9 line keys on key matrix is touched.
47	P11	OUT	Segment data signal. Signal similar to P23. Key strobe signal. Signal applied to touch-key section. A pulse signal is input to P24-P27 terminal while one of G-10 line keys on key matrix is touched.
48/49	P10/P07	OUT	Terminal not used.
50	P06	OUT	Digit selection signal. Signal similar to P22.
51	P05	OUT	Segment data signal. Signal similar to P23. Key strobe signal. Signal applied to touch-key section. A pulse signal is input to P24-P27 terminal while one of G-11 line keys on key matrix is touched.
52	P04	OUT	Segment data signal. Signal similar to P23.

Pin No.	Signal	I/O	Description
53	P03	OUT	Segment data signal. Signal similar to P23.
			Key strobe signal. Signal applied to touch-key section. A pulse signal is input to P24-P27 terminal while one of G-12 line keys on key matrix is touched.
54	P02	OUT	Digit selection signal. Signal similar to P22.
55-56	P01-P00	OUT	Segment data signal. Signal similar to P23.
57	P37	OUT	Digit selection signal. Signal similar to P22.
58-59	P36-P35	OUT	Segment data signal. Signal similar to P23.
60-64	P34-P30	OUT	Used for initial balancing of the bridge circuit (absolute humidity sensor).

ABSOLUTE HUMIDITY SENSOR CIRCUIT

(1) Structure of Absolute Humidity Sensor

The absolute humidity sensor includes two thermistors as shown in the illustration. One thermistor is housed in the closed vessel filled with dry air while another in the open vessel. Each sensor is provided with the protective cover made of metal mesh to be protected from the external airflow.

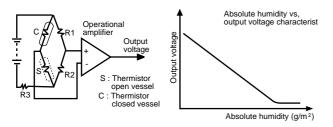


(2) Operational Principle of Absolute Humidity Sensor

The figure below shows the basic structure of an absolute humidity sensor. A bridge circuit is formed by two thermistors and two resistors (R1 and R2).

The output of the bridge circuit is to be amplified by the operational amplifier.

Each thermistor is supplied with a current to keep it heated at about 150°C, the resultant heat is dissipated in the air and if the two thermistors are placed in different humidity conditions they show different degrees of heat conductivity leading to a potential difference between them causing an output voltage from the bridge circuit, the intensity of which is increased as the absolute humidity of the air increases. Since the output is very minute, it is amplified by the operational amplifier.



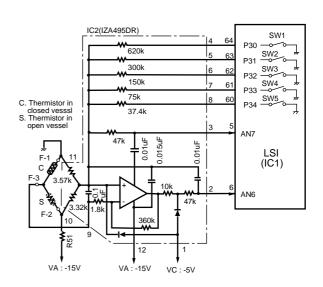
(3) Detector Circuit of Absolute Humidity Sensor Circuit

This detector circuit is used to detect the output voltage of the absolute humidity circuit to allow the LSI to control sensor cooking of the unit. When the unit is set in the sensor cooking mode, 16 seconds clearing cycle occurs than the detector circuit starts to function and the LSI observes the initial voltage available at its AN6 terminal. With this voltage given, the switches SW1 to SW5 in the

LSI are turned on in such a way as to change the resistance values in parallel with R50-1. Changing the resistance values results in that there is the same potential at both F-3 terminal of the absolute humidity sensor and AN7 terminal of the LSI. The voltage of AN6 terminal will indicate about -2.5V. This initial balancing is set up about 16 seconds after the unit is put in the Sensor Cooking mode. As the sensor cooking proceeds, the food is heated to generate moisture by which the resistance balance of the bridge circuit is deviated to increase the voltage available at AN6 terminal of the LSI. Then the LSI observes that voltage at AN6 terminal and compares it with its initial value, and when the comparison rate reaches the preset value (fixed for each menu to be cooked), the LSI causes the unit to stop sensor cooking: thereafter, the unit goes in the next operation automatically.

When the LSI starts to detect the initial voltage at AN6 terminal 16 seconds after the unit has been put in the Sensor Cooking mode, if it is not possible to balance, of the bridge circuit due to disconnection of the absolute humidity sensor, ERROR will appear on the display and the cooking is stopped.

1) Absolute humidity sensor circuit

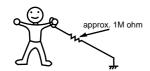


SERVICING

1. Precautions for Handling Electronic Components

This unit uses CMOS LSI in the integral part of the circuits. When handling these parts, the following precautions should be strictly followed. CMOS LSI have extremely high impedance at its input and output terminals. For this reason, it is easily influenced by the surrounding high voltage power source, static electricity charge in clothes, etc., and sometimes it is not fully protected by the built-in protection circuit.

- In order to protect CMOS LSI.
- 1) When storing and transporting, thoroughly wrap them in aluminium foil. Also wrap all PW boards containing them in aluminium foil.
- 2) When soldering, ground the technician as shown in the figure and use grounded soldering iron and work table.



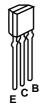
2. Shapes of Electronic Components







Transistor DTD143EA



Transistor DTA114YS DTA143ES DTB143ES

3. Servicing of Touch Control Panel

We describe the procedures to permit servicing of the touch control panel of the microwave oven and the precautions you must take when doing so. To perform the servicing, power to the touch control panel is available either from the power line of the oven itself or from an external power source.

(1) Servicing the touch control panel with power supply of the oven:

CAUTION:

THE HIGH VOLTAGE TRANSFORMER OF THE MICROWAVE OVEN IS STILL LIVE DURING **SERVICING PRESENTS A HAZARD.**

Therefore, when checking the performance of the touch control panel, put the outer cabinet on the oven to avoid touching the high voltage transformer, or unplug the primary terminal (connector) of the high voltage transformer to turn it off; the end of such connector must be insulated with an insulating tape. After servicing, be sure to replace the leads to their original locations.

A. On some models, the power supply cord between the touch control panel and the oven itself is so short that the two can't be separated.

- For those models, check and repair all the controls (sensor-related ones included) of the touch control panel while keeping it connected to the oven.
- **B.** On some models, the power supply cord between the touch control panel and the oven proper is long enough that they may be separated from each other. For those models, therefore, it is possible to check and repair the controls of the touch control panel while keeping it apart from the oven proper; in this case you must short both ends of the door sensing switch (on PWB) of the touch control panel with a jumper, which brings about an operational state that is equivalent to the oven door being closed. As for the sensor-related controls of the touch control panel, checking them is possible if dummy resistor(s) with resistance equal to that of the controls are used.

(2) Servicing the touch control panel with power supply from an external power source:

Disconnect the touch control panel completely from the oven proper, and short both ends of the door sensing switch (on PWB) of the touch control panel, which brings about an operational state that is equivalent to the oven door being closed. Connect an external power source to the power input terminal of the touch control panel, then it is possible to check and repair the controls of the touch control panel it is also possible to check the sensorrelated controls of the touch control panel by using the dummy resistor(s).

4. Servicing Tools

Tools required to service the touch control panel assembly.

- 1) Soldering iron: 30W (It is recommended to use a soldering iron with a grounding terminal.)
- 2) Oscilloscope: Single beam, frequency range: DC 10MHz type or more advanced model.
- 3) Others: Hand tools

5. Other Precautions

- 1) Before turning on the power source of the control unit, remove the aluminium foil applied for preventing static electricity.
- 2) Connect the connector of the key unit to the control unit being sure that the lead wires are not twisted.
- 3) After aluminium foil is removed, be careful that abnormal voltage due to static electricity etc. is not applied to the input or output terminals.
- 4) Attach connectors, electrolytic capacitors, etc. to PWB, making sure that all connections are tight.
- 5) Be sure to use specified components where high precision is required.

COMPONENT REPLACEMENT AND ADJUSTMENT PROCEDURE

WARNING: Avoid possible exposure to microwave energy. Please follow the instructions below before operating the oven.

- 1. Disconnect the oven from power supply.
- 2. Make sure that a definite" click" can be heard when the microwave oven door is unlatched. (Hold the door in a closed position with one hand, then push the door open button with the other, this causes the latch leads to rise, it is then possible to hear a "click' as the door switches operate.)
- 3. Visually check the door and cavity face plate for damage (dents, cracks, signs of arcing etc.).

Carry out any remedial work that is necessary before operating the oven.

Do not operate the oven if any of the following conditions exist:

- 1. Door does not close firmly.
- 2. Door hinge, support or latch hook is damaged.
- 3. The door gasket or seal or damaged.
- 4. The door is bent or warped.
- 5. There are defective parts in the door interlock system.
- 6. There are defective parts in the microwave generating and transmission assembly.
- 7. There is visible damage to the oven.

Do not operate the oven:

- 1. Without the RF gasket (Magnetron).
- 2. If the wave guide or oven cavity are not intact.
- 3. If the door is not closed.
- 4. If the outer case (cabinet) is not fitted.

Please refer to 'OVEN PARTS, CABINET PARTS, DOOR PARTS', when carrying out any of the following removal procedures:

OUTER CASE REMOVAL

To remove the outer case, proceed as follows.

- 1. Disconnect the oven from power supply.
- 2. Open the oven door and wedge it open.
- 3. Remove the screws from rear and along the side edge of case.
- 4. Slide the entire case back about 1 inch (3cm) to free it from retaining clips on the cavity face plate.
- 5. Lift the entire case from the oven.

- 6. Discharge the H.V. capacitor before carring out any further work.
- 7. Do not operate the oven with the outer case removed.

N.B.; Step1, 2 and 6 from the basis of the 3D checks.

CAUTION: DISCHARGE HIGH VOLTAGE CAPACITOR BEFORE TOUCHING ANY OVEN COMPONENTS OR WIRING.

POWER TRANSFORMER REPLACEMENT

REMOVAL

- 1. CARRY OUT 3D CHECKS.
- 2. Disconnect the wire leads from power transformer.
- 3. Disconnect the filament leads of the power transformer from the megnetron and high voltage capacitor.
- 4. Disconnect the high voltage leads of capacitor from the transformer.
- 5. Remove the two (2) screws and one (1) washer holding the transformer to the base cabinet.
- 6. Remove the transformer.

RE-INSTALL

- 1. Rest the transformer on the base cabinet with its primary terminals toward rear cabinet.
- 2. Insert the two edges of the transformer into two metal tabs of the base cabinet.

- 3. Make sure the transformer is mounted correctly to the corners underneath those tabs.
- 4. After re-installing the transformer, secure the transformer with two screws to the bace cabint, one is with outertooth washer and the other is without outer-tooth washer.
- 5. Re-connect the wire leads (primary and high voltage) and high voltage lead to the transformer and filament leads of transformer to the magnetron and capacitor, referring to the "Pictorial Diagram".
- 6. Re-install the outer case and check that the oven is operating properly.

NOTE: LIVE(ORANGE) WIRE MUST BE CONNECTED TO THE CABINET-SIDE OF THE POWER TRANSFORMER.

MAGNETRON REMOVAL

- 1. CARRY OUT 3D CHECKS
- 2. Disconnect filament lead of transfomer and high voltage wire lead from magnetron.
- 3. Take off three (3) screws secured the chassis support to oven cavity and waveguide.
- 4. Remove the cooling fan assembly refer to "Cooling Fan Removal"
- 5. Carefully remove four (4) mounting screws holding the magnetron and magnetron air guide to waveguide. When
- removing the screws hold the magnetron and magnetron air guide to prevent it from falling.
- 6. Remove the magnetron from the waveguide with care so the magnetron antenna should not hit by any metal object around the antenna

CAUTION: WHEN REPLACING THE MAGNETRON, BE SURE THE R.F. GASKET IS IN PLACE AND THE MAGNETRON MOUNTING SCREWS ARE TIGHTENED SECURELY.

ASYMMETRIC RECTIFIER AND HIGH VOLTAGE RECTIFIER REMOVAL

- 1. CARRY OUT 3D CHECKS.
- 2. Remove one (1) screw holding the high voltage rectifier terminal to the capacitor holder.
- 3. Disconnect the high voltage rectifier assembly from the capacitor.

CAUTION: WHEN REPLACING HIGH VOLTAGE RECTI-FIER ASSEMBLY, ENSURE THAT THE EARTHING SIDE TERMINAL MUST BE SE-CURED FIRMLY WITH AN EARTHING SCREW.

HIGH VOLTAGE CAPACITOR REMOVAL

- 1. CARRY OUT 3D CHECKS.
- 2. Disconnect the high voltage wire leads and rectifier assembly from the high voltage capacitor and magnetron.
- 3. Disconnect filament lead of transfomer from high voltage capacitor.
- 4. Disconnect high voltage wire leads of capacitor from

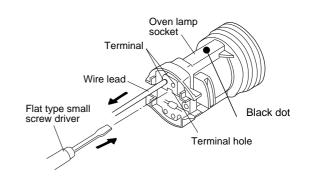
transformer.

- 5. Remove one (1) screw and washer holding the high voltage rectifier from the capacitor holder.
- Remove one (1) screw holding capacitor holder to rear cabinet.
- 7. Remove the high voltage capacitor from the holder.

OVEN LAMP SOCKET REMOVAL

- 1. CARRY OUT 3D CHECKS.
- 2. Pull the wire leads from the oven lamp socketby pushing the terminal hole of the oven lamp socket withthe flat type small screw driver.
- 3. Lift up the tab of oven lamp mounting plate holding the oven lamp socket.
- 4. Slide the oven lamp socket left-ward.
- 5. Now, the oven lamp socket is free.

CAUTION: WHEN REPLACING THE OVEN LAMP SOCKET, REPLACE IT SO THAT THE SIDE WHERE THE BLACK DOT IS PUT FACES UPWARD.



HEATER UNIT ASSEMBLY REMOVAL (HEATING ELEMENT/THERMISTOR)

- 1. CARRY OUT 3D CHECKS.
- Disconnect wire leads from oven thermal cut-out, convection motor, thermistor and heater element.
 Remove convection motor ass'y refer to "Convection Motor Removal No.3 to No.5".
- 3. Remove eleven (11) screws holding heater duct to the oven cavity.
- 4. Release two (2) snap bands holding wire harness to the thermal protection plate (left).
- 5. The heater unit is now free.

HEATING ELEMENT AND THERMISTOR

- Remove two (2) screws holding heating element to heater duct.
- 2. Loosen two (2) screws holding holders to heater duct and take heating element out of heating element holders.
- 3. Heating element is free.
- Remove two (2) screws holding thermistor to heater duct.
- 5. Thermistor is free.

CONTROL PANEL ASSEMBLY AND CONTROL UNIT REMOVAL

To remove the control panel, proceed as follows:

- 1. CARRY OUT 3D CHECKS
- 2. Disconnect connector CN-A, CN-E, CN-B, CN-F, TAB1, TAB2 and TAB3 from the control unit.
- 3 Remove one (1) screw holding the control panel back plate to the chassis support.
- 4. Remove the one (1) screw holding the bottom edge of the back plate to the cabinet base.
- 5. Remove two (2) screws holding the back plate to the oven cavity flange.
- 6. Lift up and pull the control panel forward.

Replacement of individual component is as follows:

CONTROL UNIT AND KEY UNIT

- 1. Disconnect the wire connector from the control unit.
- 2. Remove the four (4) screws holding the panel frame to the back plate.

- 3. Separate the panel frame and back plate.
- 4. Remove the three (3) screws holding the control unit to the panel frame.
- 5. Lift up the control unit and disconnect the key connector from the control unit.
- 6. Now, the control unit and frame assembly are separated.
- NOTE: 1. Before attaching a new key unit, remove remaining adhesive on the control panel frame surfaces completely with alcohol and so on.
 - When attaching the key unit to the control panel frame, adjust the lower edge and right edge of the key unit to the correct position of control panel frame.
 - 3. Stick the key unit firmly to the control panel frame by rubbing with soft cloth not to scratch.

TURNTABLE MOTOR AND/OR COUPLING REMOVAL

- 1. Disconnect the oven from power supply.
- 2. Remove one (1) screw holding the turntable motor cover to the base cabinet and take off the turntable motor cover.
- 3. Disconnect wire lead from the turntable motor.
- 4. Remove the two (2) screws holding the turntable motor to the mounting plate of the oven cavity bottom.
- 5. Pull the turntable coupling out of the oven cavity.
- 6. Turntable coupling and motor will be free.

CONVECTION MOTOR REMOVAL

- 1. CARRY OUT 3D CHECKS.
- 2. Disconnect wire leads from the convection motor. Remove the convection fan belt and pulley(M).
- 3. Remove two (2) screws holding the convection motor mounting angle to the heater duct and base cabinet.
- 4. Take out the convection motor assembly from the unit. The convection motor assembly is now free.
- 5. Remove two (2) screws and nuts holding the motor to mounting angle.
- 6. Convection motor is now free.

DAMPER ASSEMBLY REMOVAL

- 1. CARRY OUT 3D CHECKS.
- 2. Remove cooling fan motor and magnetron refer to "Cooling Fan Motor Removal" and "Magnetrom Removal".
- 3. Disconnect wire leads from damper motor and damper switch.
- 4. Remove two(2) ovenside screws holding damper motor
- angle to thermal protection plate (right).
- 5. Damper assembly is free.
- 6. Remove one (1) screw holding damper motor to damper motor angle and one (1) screw holding damper switch to damper motor angle.
- 7. Damper motor and switch are free.

FAN MOTOR REPLACEMENT

REMOVAL

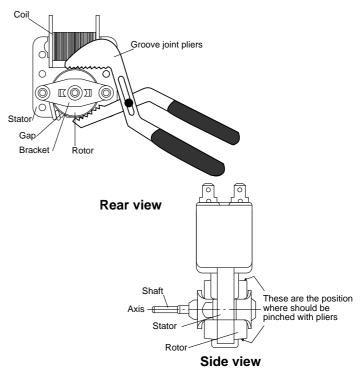
- 1. CARRY OUT 3D CHECKS.
- 2. Disconnect the wire leads from the fan motor and thermal cut-out.
- 3. Remove the three (3) screws holding the chassis support to rear cabinet, control panel back plate and waveguide.
- 4 Remove one (1) tab holding the fan duct to air guide.
- 5. Remove the fan motor assembly from the oven cavity.
- 6. Remove the fan blade assembly from the fan motor shaft according the following procedure.
- 1) Hold the edge of the rotor of the fan motor by using a pair of grove joint pliers.

CAUTION:

- * Make sure that any pieces do not enter the gap between the rotor and the stator of the fan motor. Because the rotor is easy to be shaven by pliers and metal pieces may be produced.
- * Do not touch the pliers to the coil of the fan motor because the coil may be cut or injured.
- * Do not transform the bracket by touching with the pliers.
- 2) Remove the fan blade assembly from the shaft of the fan motor by pulling fan retainer clip and rotating the fan blade with your hand.
- 3) Now, the fan blade will be free.

CAUTION:

- * Do not use this removed fan blade again.Because the hole(for shaft) of it may become bigger than a standard one.
- Remove the two (2) screws and nuts holding the fan motor and thermal cut-out mounting angle from the fun duct.
- 8. Now, the fan motor is free.



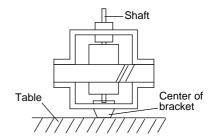
INSTALLATION

- 1. Install the fan motor and thermal cut-out angle to the fan duct with the two (2) screws and nuts.
- 2. Install the fan blade assembly to the fan motor shaft according the following procedure.
- 1) Hold the center of the bracket which supports the shaft of the fan motor on the flat table.
- 2) Apply the screw lock tight into the hole(for shaft) of the fan blade.
- Install the fan blade assemby to the shaft of fan motor by pushing the fan blade with a small, light weight, ball peen hammer or rubber mallet.

CAUTION:

- * Do not hit the fan blade strongly when installed because the bracket may be transformed.
- Make sure that the fan blade rotates smooth after installed.
- * Make sure that the axis of the shaft is not slanted.
- 3. Install the fan duct to the air guide.
- 4. Install the chassis support to the oven cavity with three (3) screws.

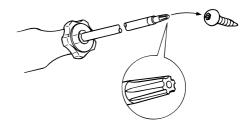
5. Connect the wire leads to the fan motor and the thermal cut-out, referring to the pictorial diagram.



CORD HOLDER REMOVAL

- Remove the one (1) special screw holding the cord holder to the rear cabinet, using the special driver LHSTIX DLR4-100T.
- 2. Now, the cord holder is free.

NOTE: When securing or loosening the special screw, LHSTIX DLR4-100T type screw driver should be used.



STOP SWITCH, UPPER LATCH SWITCH, LOWER LATCH SWITCH AND MONITOR SWITCH

REMOVAL

- 1. CARRY OUT 3D CHECKS.
- Remove control panel assembly, refer to "Control Panel Removal".
- 3. Discharge high voltage capacitor.
- 4. Disconnect wire leads from each of the switches.
- 5. Remove two (2) screws holding latch hook to oven flange.
- 6. Remove latch hook assembly from oven flange.
- 7. Push downward on the one (1) stopper tabs holding each of the switches place.

Refer to chapter "Test Procedure" and Adjustment procedure.

8. Switches are free.

At this time latch lever will be free, do not lose it.

Re-install

- 1. Re-install latch lever and each switch in its place, refer to Figure C-1.
- 2. Re-connect the wire leads to each switches and fuse holder.
 - Refer to the pictorial diagram.
- 3. Secure the latch hook (with two (2) mounting screws) to the oven flange.
- 4. Make sure that monitor switch is operating properly.

STOP SWITCH, UPPER LATCH SWITCH, LOWER LATCH SWITCH AND MONITOR SWITCH ADJUSTMENT If those switches do not operate properly due to a 4. Re-install the outer case and check for microwave leakage

misadjustment, the following adjustment should be made.

- 1. Loosen the two (2) screws holding the latch hook to the flange on the oven front face.
- With the door closed, adjust the latch hook by moving it back and forth and then adjust the latch hook by moving it back and forth. In and out play of the door allowed by the latch hook should be less than 0.5 mm.
- 3. Secure the screws with washers firmly.
- 4. Now, make sure of the upper and lower latch switches operations. If these latch switches are not activated with the door closed, loose the screws holding the latch hook to the oven cavity front flange and adjust the latch hook position.

After the adjustment, make sure of the following:

- 1. The in and out play of the door remains less than 0.5 mm at latched position.
- 2. The upper and lower latch switches interrupt the circuit before the door can be opened.
- 3. The monitor switch contacts close when the door is opened.

Re-install the outer case and check for microwave leakage around the door with an approved microwave survey meter. (Refer to Microwave Measurement Procedure.)

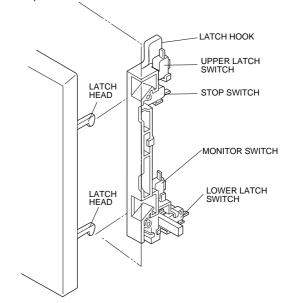


Figure C-1. Latch Switches Adjustment

DOOR DISASSEMBLY

Remove door assembly, refer to "Door Replacement". Replacement of door components are as follows:

1. Place door assembly on a soft cloth with latches facing up.

Note: As the engaging part of choke cover and door panel are provided at several places, do not force any particular part.

- 2. Insert an putty knife (thickness of about 0.5mm) into the gap between the choke cover and corner portion of door panel as shown figure C-2 to free engaging parts.
- 3. Lift up choke cover.
- 4. Now choke cover is free from door panel.

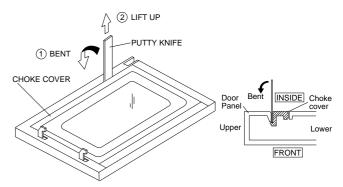


Figure C-2. Door Disassembly

DOOR REPLACEMENT AND ADJUSTMENT

DOOR REPLACEMENT

- Disconnect oven from power supply and remove outer case.
 - Remove turntable tray and roller stay from oven cavity.
- 2. Remove three (3) screws holding lower oven hinge.
- 3. Remove lower oven hinge from oven cavity bottom flange.
- 4. Remove door assembly from upper oven hinge on the oven
- 5. Door assembly is now free.

Note: When individual parts are replaced, refer to "Door Disassembly".

- 6. On re-installing door, insert the upper oven hinge into the door hinge pin.
 - Then while holding door in place.
- 7. Make sure door is parallel with oven face lines (left and upper side lines) and the door latch heads pass through the latch holes correctly.
- 8. Insert the lower oven hinge into oven cavity bottom flange and then engage the door hinge pin.
 - Then secure the lower oven hinge firmly with three (3) mounting screws.

Note: After any service to the door;

- (A) Make sure that the upper and lower latch switches are operating properly.
 - (Refer to chapter "Test Procedures".)
- (B) An approved microwave survey meter should be used to assure compliance with proper microwave radiation emission limitation standards.

DOOR ADJUSTMENT

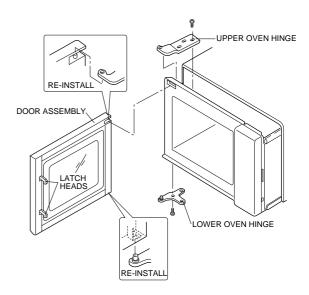
The door is adjusted by keeping the screws of each hinge loose. The lower oven hinge can be loosened.

After adjustment, make sure of the following:

1. Door latch heads smoothly catch the latch hook through the latch holes, and the latch head goes through the center of the latch hole.

- 2. Deviation of the door alignment from horizontal line of cavity face plate is to be less than 1.0mm.
- 3. The door is positioned with its face depressed toward the cavity face plate.
- Re-install outer case and check for microwave leakage around the door with an approved microwave survey meter. (Refer to Microwave Measurement Procedure.)

The door on a microwave oven is designed to act as an electronic seal preventing the leakage of microwave energy from the oven cavity during the cook cycle. This function does not require that the door be air-tight, moisture (condensation)-tight or light-tight. Therefore, the occasional apperance of moisture, light or the sensing of gentle warm air movement around the oven door is not abnormal and do not of themselves, indicate a leakage of microwave energy from the oven cavity. If such were the case, your oven could not be equipped with a vent, the very purpose of which is to exhaust the vapor-laden air from the oven cavity.



MICROWAVE MEASUREMENT

After adjustment of door latch switches, monitor switch and door are completed individually or collectively, the following leakage test must be performed with a survey instrument and it must be confirmed that the result meets the requirements of the performance standard for microwave oven.

REQUIREMENT

The safety switch must prevent microwave radiation emission in excess of 5mW/cm2 at any point 5cm or more from external surface of the oven.

PREPARATION FOR TESTING:

Before beginning the actual test for leakage, proceed as follows:

- Make sure that the test instrument is operating normally as specified in its instruction booklet. Important:
 - Survey instruments that comply with the requirement for instrumentations as prescribed by the performance

standard for microwave ovens must be used for testing. Recommended instruments are:

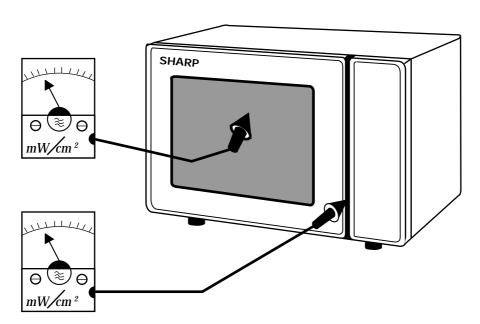
NARDA 8100

NARDA 8200

HOLADAY HI 1500

SIMPSON 380M

- 2. Place the oven tray into the oven cavity.
- 3. Place the load of 275 ± 15 ml of water initially at $20 \pm 5^{\circ}$ C in the centre of the oven tray. The water container should be a low form of 600 ml beaker with inside diameter of approx. 8.5cm and made of an electrically non-conductive material such as glass or plastic. The placing of this standard load in the oven is important not only to protect the oven, but also to insure that any leakage is measured accurately.
- 4. Close the door and turn the oven ON with the timer set for several minutes. If the water begins to boil before the survey is completed, replace it with 275ml of cool water.
- 5. Move the probe slowly (not faster that 2.5cm/sec.) along the gap.
- 6. The microwave radiation emission should be measured at any point of 5cm or more from the external surface of the oven.



Microwave leakage measurement at 5 cm distance

SCHEMATIC NOTE: CONDITION OF OVEN

4 8008 01 0058

- 1. DOOR CLOSED.
- 2. CLOCK APPERARS ON DISPLAY

NOTE: ★ indicates components with potential above 250V.

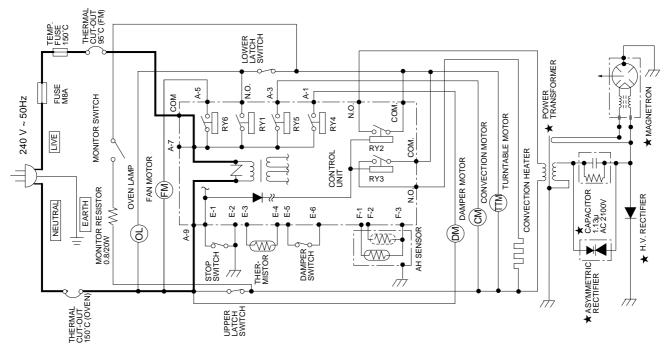


Figure O-1. Oven Schematic-OFF Condition

SCHEMATIC

NOTE: CONDITION OF OVEN

- 1. DOOR CLOSED.
- 2. COOKING TIME PROGRAMMED.
- 3. VARIABLE COOKING CONTROL "HIGH"
- 4. START PAD TOUCHED.

SCHEMATIC

NOTE: CONDITION OF OVEN

- 1. DOOR CLOSED.
- 2. "SENSOR COOK" PAD TOUCHED
- 3. START PAD TOUCHED.

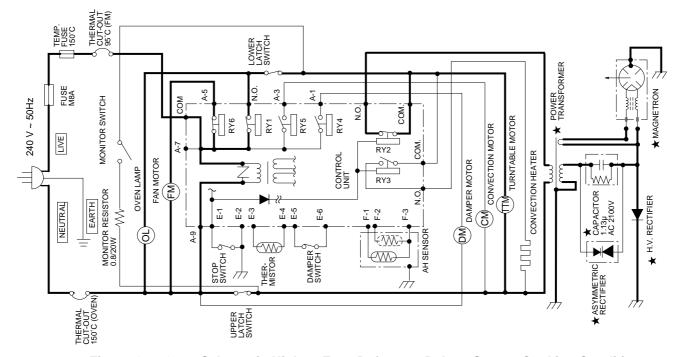


Figure O-2. Oven Schematic-High or Easy Defrost or Reheat Sensor Cooking Condition

SCHEMATIC

NOTE: CONDITION OF OVEN

- 1. DOOR CLOSED.
- 2. CONVECTION PAD TOUCHED.
- 3.DESIRED TEMO. PAD TOUCHED.
- 4. START PAD TOUCHED.

NOTE: ★ indicates components with potential above 250V.

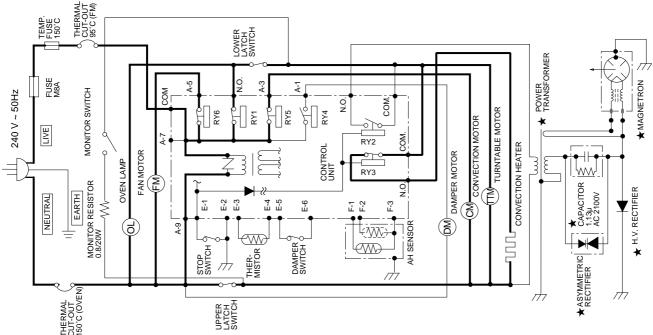


Figure O-3. Oven Schematic-Convection Cooking Condition

SCHEMATIC

NOTE: CONDITION OF OVEN

- 1. DOOR CLOSED.
- 2. MIX COOKING PAD TOUCHED.
- 3.DESIRED TEMP. PAD TOUCHED.
- 4. START PAD TOUCHED.

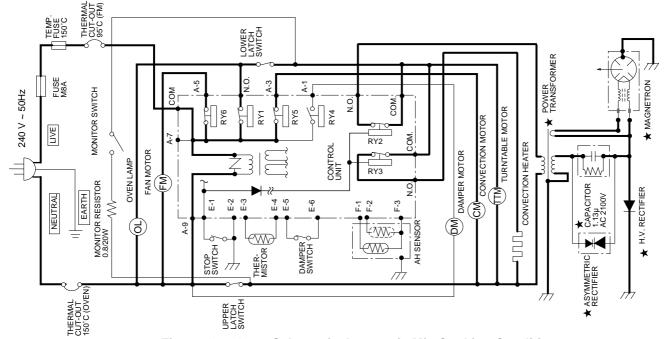
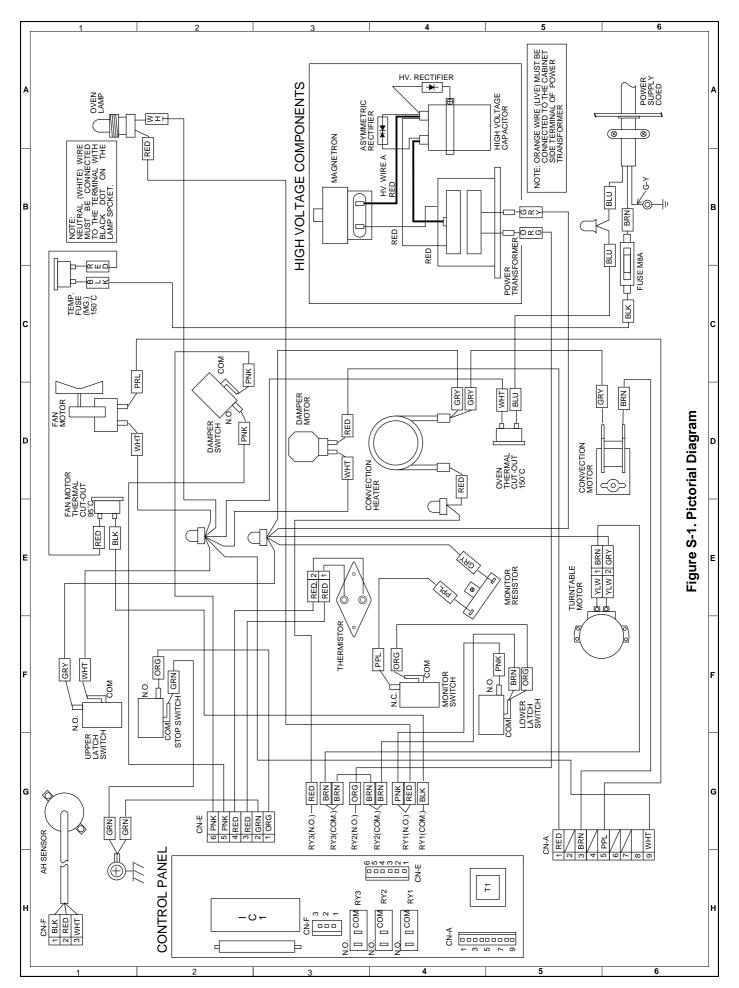
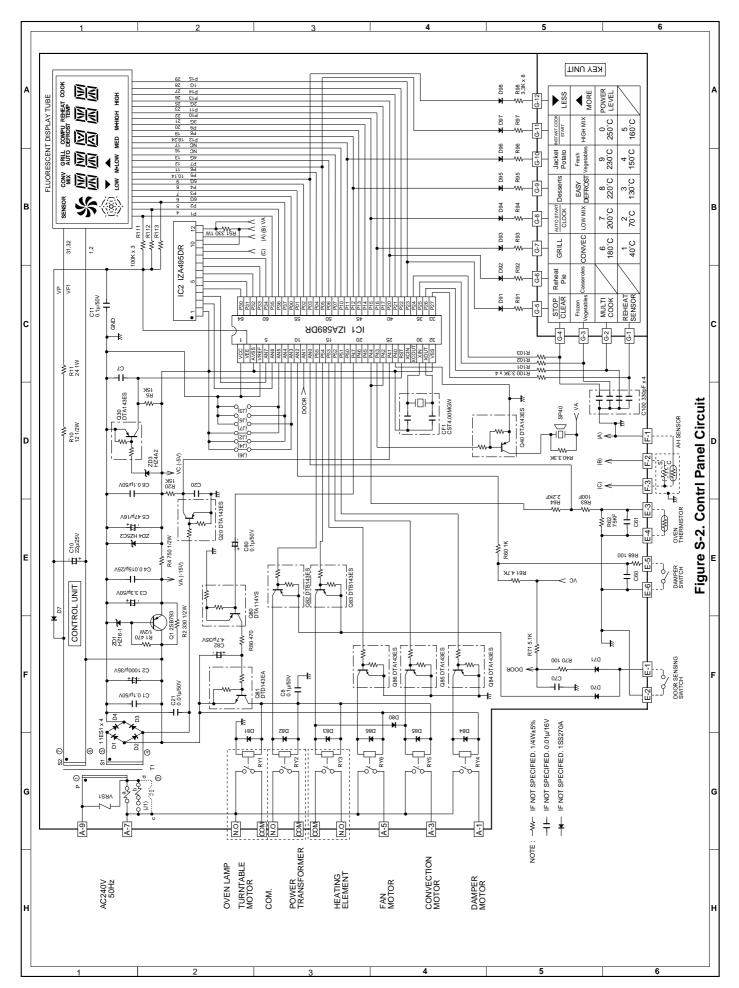
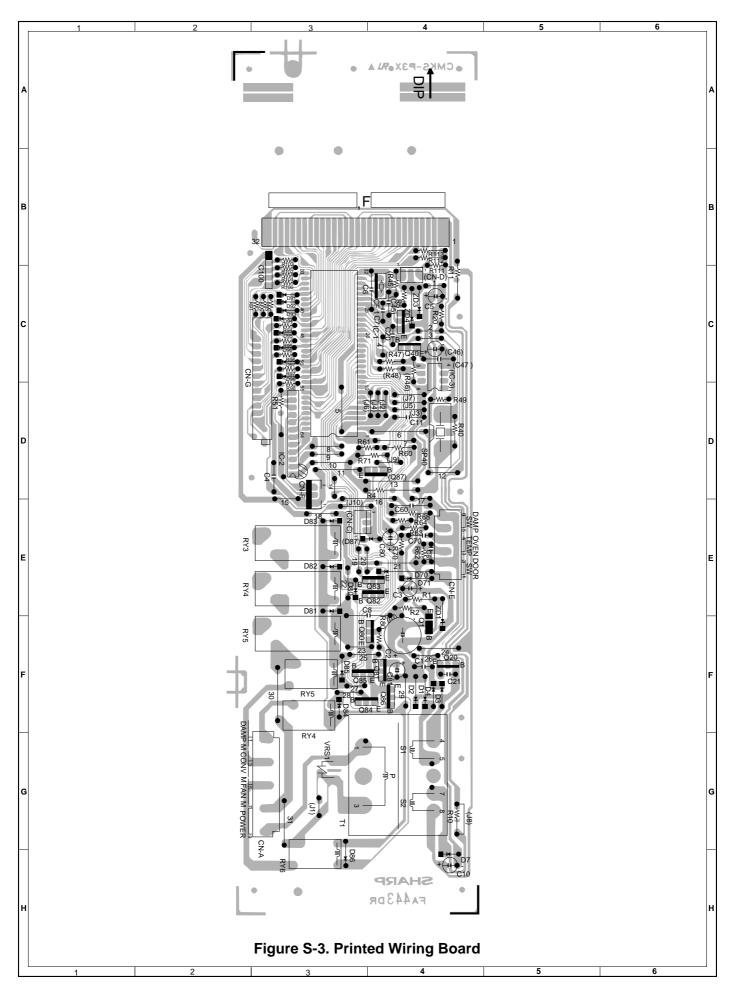


Figure O-4. Oven Schematic-Automatic Mix Cooking Condition







PARTS LIST

Note: The parts marked " Δ " may cause undue microwave exposure. The parts marked "*" are used in voltage more than 250V.

	REF. NO.	PART NO.	DESCRIPTION	Q'TY	CODE
	REF. NO.	PART NO.		Q'IT	CODE
1			ELECTRICAL PARTS		
*	1- 1	FH-DZA058WRK0	High voltage rectifier assembly	1	AL
	1- 2	FH-HZA041WRE0	Thermistor assembly	1	AN
	1- 3	QACCAA040WRE0	Power supply cord	1	AV
	1- 4 1- 5	QFS-CA010WRE0 OFS-TA013WRE0	Fuse (M8A) Temperature fuse 150°C	1 1	AE AG
	1- 6	OFSHDA002WRE0	Fuse holder	1	AG AE
	1 - 7	QSOCLA011WRE0	Oven lamp socket	1 1	AH
	1- 8	OSW-MA111WRE0	Monitor switch	1	AK
	1- 9	QSW-MA110WRE0	Stop switch and Damper switch	2	AK
	1-10	QSW-MA110WRE0	Upper and lower latch switches	2	AK
*	1-11	RC-QZA075WRE0	High voltage capacitor	1	AU
	1-12	RHET-A139WRE0	Convection heater	1	AY
	1-13	RLMPTA029WRE0	Oven lamp	1	AK
	1-14	RMOTDA191WRE0	Damper motor	1	AS
	1-15	RMOTDA097WRE0	Turntable motor	1	AV
	1-16 1-17	RMOTEA303WRE0 RMOTEA284WRE0	Cooling fan motor Convection motor	1	AX AZ
	1-17	RR-WZA003WRE0	Monitor resistor 0.8Ω 20W	1 1	AZ AG
	1-19	RTHM-A085WRE0	Thermal cut-out 150°C (OVEN)	1 1	AL
	1-20	RTHM-A079WRE0	Thermal cut-out 95°C (FM)	1	AL
*	1-21	RTRN-A318WRE0	Power transformer	1	BP
Δ*	1-22	RV-MZA114WRE0	Magnetron	1	BG
	1-23	FDTCTA157WRK0	AH sensor assembly	1	AY
			CABINET PARTS		
1	2- 1	FDAI-A181WRY0	Base plate assembly	1	AR
Δ	2- 1	FHNG-A092WRM0	Oven hinge (Lower)	1 1	AR AF
Δ	2-3	GCABDA074WRW0	Rear cabinet	1 1	AG
	2-4	GCABUA463WRP0	Outer case cabinet	1	BF
	2- 5	GCOVHA156WRP0	Turntable motor cover	1	AB
	2- 6	GFTARA001WRW0	Oven lamp access cover	1	AC
	2- 7	GLEGPA019WRE0	Foot	4	AD
	2- 8	LBNDKA036WRP0	Capacitor holder	1	AG
	2- 9	LBSHC0032WRE0	Cord bushing	1	AB
	2-10	LSTPPA141WRF0	Cord anchorage (Upper)	1	AD
	2-11 2-12	LSTPP0009YBF0 MLEVPA122WRF0	Cord anchorage (Lower) Latch lever	1	AC AD
Δ	2-12	PHOK-A043WRF0	Latch hook	1	AD AM
- 1	-		CONTROL PANEL PARTS		
ı				<u> </u>	
	3- 1	CPWBFA599WRK0	Control unit (Not Replaceble Item) 5-pin connector(A)	1 1	BN
	3- 1A 3- 1B	QCNCMA227DRE0 OCNCMA267DRE0	6-pin connector(A)	1 1	AC AC
	3- 1B 3- 1C	QCNCMA237DRE0	3-pin connector(F)	1	AC AD
	3- 1D	QCNCWA030DRE0	12-pin connector(G)	1	AF
	3- 1E	RV-KXA054DRE0	Fluorescent display tube	1	AW
	C1	RC-KZA087DRE0	Capacitor 0.1µF 50V	1	AB
	C2	VCEAB31VW108M	Capacitor 1000µF 35V	1	AF
	C3	VCEAB31HW335M	Capacitor 3.3µF 50V	1	AA
	C4	VCKYB11EX153N	Capacitor 0.015µF 25V	1	AA
	C5	VCEAB31CW476M	Capacitor 47µF 16V	1	AA
	C6	RC-KZA087DRE0	Capacitor 0.1µF 50V	1	AB
	C7	VCKYD11CY103N	Capacitor 0.01µF 16V	1	AH
	C8 C10	RC-KZA087DRE0 VCEAB31EW226M	Capacitor 0.1µF 50V Capacitor 22µF 25V	1 1	AB AA
	C10	RC-KZA087DRE0	Capacitor 22µF 25V Capacitor 0.1µF 50V	1	AA AB
	C20	VCKYD11CY103N	Capacitor 0.1µF 16V	1	AH
	C21	VCTYF31HF103Z	Capacitor 0.01µF 50V	1	AB
	C60-61	VCKYD11CY103N	Capacitor 0.01µF 16V	2	AH
	C70	VCKYD11CY103N	Capacitor 0.01µF 16V	1	AH
	C80	VCEAB31HW104M	Capacitor 0.1μF 50V	1	AM
	C81	VCEAB31VW475M	Capacitor 4.7µF 35V	1	AA
	C100	RMPTEA009DRE0	Capacitor array 330pF x 4	1	AE
	CF1	RCRS-A012DRE0	Ceramic resonator (CST4.00MGW)	1	AD
	D1-4 D7	VHD11ES1///-1 VHD1SS270A/-1	Diode (11ES1) Diode (1SS270ATA)	1	AB AA
	D70-71	VHD1SS270A/-1 VHD1SS270A/-1	Diode (ISS270ATA) Diode (ISS270ATA)	2	AA AA
	D80-86	VHD1SS270A/-1	Diode (ISS270ATA)	7	AA AA
	D91-98	VHD1SS270A/-1	Diode (1SS270ATA)	8	AA
		<u> </u>			

Note: The parts marked " Δ " may cause undue microwave exposure. The parts marked "*" are used in voltage more than 250V.

REF. NO.	PART NO.	DESCRIPTION	Q'TY	CODE
IC1	RH-IZA589DRE0	LSI	1	AX
IC2	RH-IZA495DRE0	IC	1	AL
Q1	VS2SB793///-4	Transistor (2SB793)	1	AC
Q20	VSDTA143ES/1B	Transistor (DTA143ES)	1	AB
Q30	VSDTA143ES/1B	Transistor (DTA143ES)	1	AB
Q40	VSDTA143ES/1B	Transistor (DTA143ES)	1	AB
Q80	VSDTA114YS/-3	Transistor (DTA114YS)	1	AB
Q81	VSDTD143EA/-4	Transistor (DTD143EA)	1	AC
Q82-83	VSDTB143ES/-3	Transistor (DTB143ES)	2	AC
Q84-86	VSDTA143ES/1B	Transistor (DTA143ES)	3	AB
R1	VRD-B12HF471J	Resistor 470 ohm 1/2W	1	AA
R2	VRD-B12HF331J	Resistor 330 ohm 1/2W	1	AA
R4	VRD-B12HF751J	Resistor 750 ohm 1/2W	1	AA
R5	VRD-B12EF153J	Resistor 15k ohm 1/4W	1	AA
R10	VRD-B12HF120J	Resistor 12 ohm 1/2W	1	AB
R11	VRS-B13AA240J	Resistor 24 ohm 1W	1	AB
R20	VRD-B12EF153J	Resistor 15k ohm 1/4W	1 1	AA
R40	VRD-B12EF332J	Resistor 3.3k ohm 1/4W	1 1	AA
R51	VRS-B13AA331J	Resistor 330 ohm 1W	1	AA
R60	VRD-B12EF102J	Resistor 1k ohm 1/4W	1	AA
R61	VRD-B12EF472J	Resistor 4.7k ohm 1/4W	1	AA
R62	VRN-B12EK753F	Resistor 75k ohm(F) 1/4W	1	AA
R63	VRN-B12EK101F	Resistor 100 ohm(F) 1/4W	1	AA
R64	VRN-B12EK222F	Resistor 2.2k ohm(F) 1/4W	1	AA
R68	VRD-B12EF101J	Resistor 100 ohm 1/4W	1	AA
R70	VRD-B12EF101J	Resistor 100 ohm 1/4W	1	AA
R71	VRD-B12EF512J	Resistor 5.1k ohm 1/4W	1	AA
R80	VRD-B12EF3120 VRD-B12EF471J	Resistor 470 ohm 1/4W	1	AA
R91-98	VRD-B12EF4710 VRD-B12EF332J	Resistor 3.3k ohm 1/4W	8	AA
R100-103	VRD-B12EF332J	Resistor 3.3k ohm 1/4W	4	AA
R111-113	VRD-B12EF3320 VRD-B12EF104J	Resistor 100k ohm 1/4W	3	AA
RY1-3	RRLY-A083DRE0	Relay (OMIF-S-118LM)	3	AK
RY4-6	RRLY-A078DRE0	Relay (OJ-SS-118LM)	3	AG
SP40	RALM-A014DRE0	Buzzer (PKM22EPT)	1	AG
T1	RTRNPA089DRE0	Transformer	1 1	AU
VRS1	RH-VZA032DRE0	Varistor (10G471K)	1	AU AE
		· · · · · · · · · · · · · · · · · · ·	1 - 1	
ZD1	VHEHZ161///-1	Zener diode (HZ16-1)	1 1	AA
ZD3	VHEHZ4A2///-1	Zener diode (HZ4A2)	- 1	AA
ZD4	VHEHZ5C2///-1	Zener diode (HZ5C2)	1	AA
3- 2	FPNLCB100WRK0	Control panel frame with key unit	1	BE
3- 2-1	FUNTKA608WRE0	Key unit	1	BB
3- 2-2	HPNLCA800WRF0	Panel grill	1	AL
3- 3	JBTN-A766WRF0	Open button	1	AG
3- 4	MSPRCA050WRE0	Open button spring	1	AB
3- 5	LANGTA197WRW0	Control panel back plate	1	AK
3- 6	MLEVFA057WRW0	Open lever	1	AE
3- 7	NSFTTA042WRE0	Open shaft	1	AE
3- 8	XEPSD30P10XS0	Screw; control unit mtg.	3	AA
3- 9	XCPSD40P12000	Screw; control panel back plate mtg.	l 4 l	AA

OVEN PARTS

	4- 1	FBRGMA002WRE0	Bearing assembly	1	AQ
Δ	4- 2	FDUC-A124WRW0	Steam duct assembly	1	AN
	4- 3	NFANJA020WRE0	Cooling fan	1	AE
	4- 4	FFTA-A034WRK0	Damper ass'y	1	AM
	4- 5	FOVN-A316WRY0	Oven cavity	1	AX
	4- 6	FROLPA072WRK0	Roller stay	1	AL
	4- 7	LANGFA089WRW0	Chassis support	1	AE
	4- 8	LANGQA407WRW0	Convection motor mounting plate	1	AG
	4- 9	LANGQA213WRW0	Lamp socket mounting angle	1	AE
	4-10	LANGQA369WRP0	Thermal cut-out mounting angle	1	AB
	4-11	LANGTA196WRW0	Bearing mounting plate	1	AD
	4-12	LBNDK0054WRE0	Heater element holder	2	AB
	4-13	LFIX-A013WRW0	Bearing holder plate	1	AB
	4-14	LHLDKA009WRF0	Cord holder	1	AD
	4-15	MCAMPA030WRF0	Damper cam	1	AC
Δ	4-16	MHNG-A165WRM0	Oven hinge (upper)	1	AE
	4-17	NBLTKA005WRE0	Convection fan belt	1	AF
	4-18	NCPL-A021WRF0	Turntable coupling	1	AE
	4-19	NFANMA019WRW0	Convection fan	1	AE
	4-20	PCUSGA236WRP0	Cushion	1	AC
	4-21	NPLYBA025WRF0	Pulley (F)	2	AC

Note: The parts marked " Δ " may cause undue microwave exposure. The parts marked "*" are used in voltage more than 250V.

	REF. NO.	PART NO.	DESCRIPTION	Q'TY	CODE			
ſ	4-22	NSFTTA114WRE0	Damper shaft	1	AB			
	4-23	NTNT-A019WRH0	Turntable tray	1	AT			
	4-24	PCOVPA301WRE0	Waveguide cover	1	ΑE			
	4-25	PCOVPA292WRF0	AH sensor cover	1	AD			
L	4-26	PCUSGA410WRP0	Transformer cushion D	1	AD			
	4-27	PCUSUA424WRP0	Magnetron duct cushion	1	AG			
	4-28	PCUSUA196WRP0	Cushion	2	AD			
	4-29	PCUSUA425WRP0	Cushion	1 2	AG			
	4-30 4-31	PCUSUA197WRP0	Steam cushion C Heater duct assembly	1	AD			
╌	4-31	FDUC-A279WRK0 PDUC-A269WRW0	Damper duct	1	AT AK			
	4-33	PDUC-A270WRF0	Cooling fan duct	1	AL			
	4-34	PFPF-A138WRE0	Thermal protection sheet (Left)	1	AK			
	4-35	PREFHA028WRW0	Thermal protection plate (Left)	1	AS			
	4-36	PFPF-A139WRE0	Thermal protection sheet (Right)	1	AF			
ı	4-37	PGLSPA181WRE0	Oven lamp screen	1	AG			
	4-38	PREFHA053WRW0	Thermal protection plate (Right)	1	AQ			
	4-39	PCUSUA167WRP0	Cushion	2	AF			
	4-40	PFPF-A064WRE0	Thermal protection sheet	1	AE			
L	4-41	PSKR-A153WRW0	Air guide (Bottom)	1	AK			
	4-42	PSKR-A171WRW0	Magnetron air guide	1	AF			
L	4-43	PSKR-A161WRW0	Air guide (Right)	1	AF			
_			DOOR PARTS					
7	5	CDORFA648WRK0	Door assembly, complete.	1	BS			
7	5- 1	DDORFA711WRY0	Door panel	1	BG			
	5- 2	GCOVHA155WRF0	Choke cover	1	AP			
	5- 3	GWAKPA142WRF0	Door frame	1	AT			
L	5- 4	HDECQA123WRF0	Door sash (right)	1	AF			
	5- 5	HDECQA124WRF0	Door sash (left)	1	AF			
7	5- 6	LSTPPA045WRF0	Upper latch head	1 1	AB			
7	5- 7 5- 8	LSTPPA046WRF0 MSPRTA163WRE0	Lower latch head Latch spring	1 1	AB AD			
	5- 0 5- 9	NSFTTA044WRE0	Latch shaft	1 1	AD AC			
ŀ	5-10	PGLSPA422WRE0	Door glass	1	BA			
L								
Г	MISCELLANEOUS 6- 1 FAMI-A059WRMO High rack 1 AP							
	6- 2	FAMI-A059WRM0	Low rack	1	AP			
	6- 3	TCADCA546WRR0	Cook book	1	AZ			
	6- 4	TINSEA631WRR0	Operation manual	1	AL			
	6- 5	TLABNA191WRR0	Menu label	1	AD			
ı	6- 6	FW-VZB347WRE0	Main wire harness	1	BB			
*	6- 7	QW-QZA202WRE0	High voltage wire A	1 1	AK			
	6- 8	TSPCNC031WRR0	Nome wilets	1				
	6- 9		Name plate	1	AD			
- 1		FW-VZB342WRE0	Thermistor harness	1 1	AN			
	6-10	TLABSA029WRR0	Thermistor harness Fuse label	1 1 1	AN AC			
F	6-11	TLABSA029WRR0 LHLDWA012WRE0	Thermistor harness Fuse label Purse lock "L"	1 1 1	AN AC AB			
-	6-11 6-12	TLABSA029WRR0 LHLDWA012WRE0 QTANP0020YBE0	Thermistor harness Fuse label Purse lock "L" Connector CE-230	1 1 1 1	AN AC AB AA			
	6-11	TLABSA029WRR0 LHLDWA012WRE0	Thermistor harness Fuse label Purse lock "L" Connector CE-230 Caution label	1 1 1	AN AC AB			
	6-11 6-12 6-13	TLABSA029WRR0 LHLDWA012WRE0 QTANP0020YBE0 TCAUHA055WRR0	Thermistor harness Fuse label Purse lock "L" Connector CE-230 Caution label SCREWS, NUTS AND WASHERS	1 1 1 1 1	AN AC AB AA AF			
- 	6-11 6-12 6-13	TLABSA029WRR0 LHLDWA012WRE0 QTANP0020YBE0 TCAUHA055WRR0 XHTSD40P08RV0	Thermistor harness Fuse label Purse lock "L" Connector CE-230 Caution label SCREWS, NUTS AND WASHERS Screw; 4mm x 8mm	1 1 1 1 1 1	AN AC AB AA AF			
	6-11 6-12 6-13 7- 1 7- 2	TLABSA029WRR0 LHLDWA012WRE0 QTANP0020YBE0 TCAUHA055WRR0 XHTSD40P08RV0 LX-BZ0202WRE0	Thermistor harness Fuse label Purse lock "L" Connector CE-230 Caution label SCREWS, NUTS AND WASHERS Screw; 4mm x 8mm Special screw	1 1 1 1 1 1 5 2	AN AC AB AA AF AA AB			
[7- 1 7- 2 7- 3	TLABSA029WRR0 LHLDWA012WRE0 QTANP0020YBE0 TCAUHA055WRR0 XHTSD40P08RV0 LX-BZ0202WRE0 LX-CZA020WRE0	Thermistor harness Fuse label Purse lock "L" Connector CE-230 Caution label SCREWS, NUTS AND WASHERS Screw; 4mm x 8mm Special screw Special screw Special screw	1 1 1 1 1 1 5 2 6	AN AC AB AA AF AA AB AA			
	7- 1 7- 2 7- 3 7- 4	TLABSA029WRR0 LHLDWA012WRE0 QTANP0020YBE0 TCAUHA055WRR0 XHTSD40P08RV0 LX-BZ0202WRE0 LX-CZA020WRE0 XCTWW40P08000	Thermistor harness Fuse label Purse lock "L" Connector CE-230 Caution label SCREWS, NUTS AND WASHERS Screw; 4mm x 8mm Special screw Special screw Screw; 4mm x 8mm	1 1 1 1 1 1 5 2 6 15	AN AC AB AA AF AA AB AA AA AA			
	7- 1 7- 2 7- 3 7- 4 7- 5	TLABSA029WRR0 LHLDWA012WRE0 QTANP0020YBE0 TCAUHA055WRR0 XHTSD40P08RV0 LX-BZ0202WRE0 LX-CZA020WRE0 XCTWW40P08000 XCBWW30P06000	Thermistor harness Fuse label Purse lock "L" Connector CE-230 Caution label SCREWS, NUTS AND WASHERS Screw; 4mm x 8mm Special screw Special screw Screw; 4mm x 8mm Screw; 4mm x 8mm Screw; 3mm x 6mm	1 1 1 1 1 1 1 5 2 6 15 4	AN AC AB AA AF AA AB AA AA AA AA			
	7- 1 7- 2 7- 3 7- 4 7- 5	TLABSA029WRR0 LHLDWA012WRE0 QTANP0020YBE0 TCAUHA055WRR0 XHTSD40P08RV0 LX-BZ0202WRE0 LX-CZA020WRE0 XCTWW40P08000 XCBWW30P06000 LX-CZ0052WRE0	Thermistor harness Fuse label Purse lock "L" Connector CE-230 Caution label SCREWS, NUTS AND WASHERS Screw; 4mm x 8mm Special screw Special screw Screw; 4mm x 8mm Screw; 4mm x 8mm Screw; 3mm x 6mm Special screw Special screw	1 1 1 1 1 1 1 5 2 6 15 4	AN AC AB AA AF AA AB AA AA AA AA			
	7- 1 7- 2 7- 3 7- 4 7- 5	TLABSA029WRR0 LHLDWA012WRE0 QTANP0020YBE0 TCAUHA055WRR0 XHTSD40P08RV0 LX-BZ0202WRE0 LX-CZA020WRE0 XCTWW40P08000 XCBWW30P06000	Thermistor harness Fuse label Purse lock "L" Connector CE-230 Caution label SCREWS, NUTS AND WASHERS Screw; 4mm x 8mm Special screw Special screw Screw; 4mm x 8mm Screw; 4mm x 8mm Screw; 3mm x 6mm	1 1 1 1 1 1 1 5 2 6 15 4	AN AC AB AA AF AA AB AA AA AA AA			
	7- 1 7- 2 7- 3 7- 4 7- 5 7- 6 7- 7	TLABSA029WRR0 LHLDWA012WRE0 QTANP0020YBE0 TCAUHA055WRR0 XHTSD40P08RV0 LX-BZ0202WRE0 LX-CZA020WRE0 XCTWW40P08000 XCBWW30P06000 LX-CZ0052WRE0 XBPSD40P06KS0	Thermistor harness Fuse label Purse lock "L" Connector CE-230 Caution label SCREWS, NUTS AND WASHERS Screw; 4mm x 8mm Special screw Special screw Screw; 4mm x 8mm Screw; 3mm x 6mm Special screw Screw; 4mm x 8mm Screw; 3mm x 6mm	1 1 1 1 1 1 1 1 5 2 6 15 4	AN AC AB AA AF AA AB AA AA AA AA AA			
	7-1 7-2 7-3 7-6 7-6 7-7 7-8 7-9 7-10	TLABSA029WRR0 LHLDWA012WRE0 QTANP0020YBE0 TCAUHA055WRR0 XHTSD40P08RV0 LX-BZ0202WRE0 LX-CZA020WRE0 XCTWW40P08000 XCBWW30P06000 LX-CZ0052WRE0 XBPSD40P06KS0 XFPSD30P10000	Thermistor harness Fuse label Purse lock "L" Connector CE-230 Caution label SCREWS, NUTS AND WASHERS Screw; 4mm x 8mm Special screw Special screw Screw; 4mm x 8mm Screw; 3mm x 6mm Screw; 3mm x 6mm Special screw Screw; 4mm x 10mm Screw; 3mm x 10mm Screw; 3mm x 14mm Screw; 4mm x 12mm	1 1 1 1 1 1 1 1 1 2 6 15 4 2 2 1	AN AC AB AA AF AA AA AA AA AA AA AA			
	7-1 7-2 7-3 7-4 7-5 7-6 7-7 7-8 7-9 7-10	TLABSA029WRR0 LHLDWA012WRE0 QTANP0020YBE0 TCAUHA055WRR0 XHTSD40P08RV0 LX-BZ0202WRE0 LX-CZA020WRE0 XCTWW40P08000 XCBWW30P06000 LX-CZ0052WRE0 XBPSD40P06KS0 XFPSD30P10000 XBPSD30P14K00	Thermistor harness Fuse label Purse lock "L" Connector CE-230 Caution label SCREWS, NUTS AND WASHERS Screw; 4mm x 8mm Special screw Special screw Screw; 4mm x 8mm Screw; 4mm x 8mm Screw; 3mm x 6mm Special screw Screw; 3mm x 6mm Special screw Screw; 4mm x 6mm Special screw Screw; 3mm x 10mm Screw; 3mm x 14mm	1 1 1 1 1 1 1 1 1 2 6 15 4 2 2 1 1	AN AC AB AA AF AA AB AA AA AA AA AA AA AA AA			
	7-1 7-2 7-3 7-4 7-5 7-6 7-7 7-8 7-9 7-10 7-11 7-12	TLABSA029WRR0 LHLDWA012WRE0 QTANP0020YBE0 TCAUHA055WRR0 XHTSD40P08RV0 LX-BZ0202WRE0 LX-CZA020WRE0 XCTWW40P08000 XCBWW30P06000 LX-CZ0052WRE0 XBPSD40P06KS0 XFPSD30P14K00 XOTSD40P12RV0 XBPSD40P25000 XFPSD40P25000	Thermistor harness Fuse label Purse lock "L" Connector CE-230 Caution label SCREWS, NUTS AND WASHERS Screw; 4mm x 8mm Special screw Special screw Screw; 4mm x 8mm Screw; 3mm x 6mm Special screw Screw; 4mm x 8mm Screw; 3mm x 6mm Special screw Screw; 4mm x 10mm Screw; 3mm x 10mm Screw; 3mm x 14mm Screw; 4mm x 25mm Screw; 4mm x 25mm Screw; 4mm x 25mm	1 1 1 1 1 1 1 1 1 1 2 6 15 4 2 2 1 1 1 1 1 1 2 2 2 2 2 2 2 2 2 2 2	AN AC AB AA AF AA AB AA			
	7-1 7-2 7-3 7-6 7-6 7-7 7-8 7-10 7-11 7-12 7-13	TLABSA029WRR0 LHLDWA012WRE0 QTANP0020YBE0 TCAUHA055WRR0 XHTSD40P08RV0 LX-BZ0202WRE0 LX-CZA020WRE0 XCTWW40P08000 XCBWW30P06000 LX-CZ0052WRE0 XBPSD40P06KS0 XFPSD30P14K00 XOTSD40P12RV0 XBPSD40P25000 LX-CZA030WRE0	Thermistor harness Fuse label Purse lock "L" Connector CE-230 Caution label SCREWS, NUTS AND WASHERS Screw; 4mm x 8mm Special screw Special screw Screw; 4mm x 8mm Screw; 3mm x 6mm Special screw Screw; 3mm x 6mm Special screw Screw; 4mm x 10mm Screw; 3mm x 14mm Screw; 3mm x 12mm Screw; 4mm x 25mm Screw; 4mm x 25mm Screw; 4mm x 25mm Special screw Special screw	1 1 1 1 1 1 1 1 1 1 1 2 6 15 4 2 2 1 1 1 1 1 1 2 2 2 2 2 2 2 2 2 2 2	AN AC AB AA AF AA			
	7-1 7-2 7-3 7-4 7-5 7-6 7-7 7-8 7-9 7-10 7-11 7-12 7-13 7-14	TLABSA029WRR0 LHLDWA012WRE0 QTANP0020YBE0 TCAUHA055WRR0 XHTSD40P08RV0 LX-BZ0202WRE0 LX-CZA020WRE0 XCTWW40P08000 XCBWW30P06000 LX-CZ0052WRE0 XBPSD40P06KS0 XFPSD30P10000 XBPSD30P14K00 XOTSD40P12RV0 XBPSD40P25000 LX-CZA030WRE0 XBTWW40P06000	Thermistor harness Fuse label Purse lock "L" Connector CE-230 Caution label SCREWS, NUTS AND WASHERS Screw; 4mm x 8mm Special screw Special screw Screw; 4mm x 8mm Screw; 3mm x 6mm Special screw Screw; 3mm x 6mm Special screw Screw; 4mm x 10mm Screw; 3mm x 14mm Screw; 3mm x 12mm Screw; 4mm x 25mm Screw; 4mm x 25mm Screw; 4mm x 25mm Special screw Screw; 4mm x 25mm	1 1 1 1 1 1 1 1 1 1 1 2 6 15 4 2 2 1 1 1 1 1 1 1 2 2 8 8 8 8 8 8 8 8 8	AN AC AB AA AF AA			
	7-1 7-2 7-3 7-4 7-5 7-6 7-7 7-8 7-9 7-10 7-11 7-12 7-13 7-14 7-15	TLABSA029WRR0 LHLDWA012WRE0 QTANP0020YBE0 TCAUHA055WRR0 XHTSD40P08RV0 LX-BZ0202WRE0 LX-CZA020WRE0 XCTWW40P08000 XCBWW30P06000 LX-CZ0052WRE0 XBPSD40P06KS0 XFPSD30P10000 XBPSD30P14K00 XOTSD40P12RV0 XBPSD40P25000 LX-CZA030WRE0 XBTWW40P06000 XCPSD30P06000	Thermistor harness Fuse label Purse lock "L" Connector CE-230 Caution label SCREWS, NUTS AND WASHERS Screw; 4mm x 8mm Special screw Special screw Screw; 4mm x 8mm Screw; 3mm x 6mm Special screw Screw; 4mm x 6mm Special screw Screw; 4mm x 10mm Screw; 3mm x 14mm Screw; 3mm x 12mm Screw; 4mm x 25mm Screw; 4mm x 25mm Screw; 4mm x 25mm Screw; 4mm x 25mm Screw; 4mm x 6mm Screw; 4mm x 6mm Screw; 4mm x 6mm Screw; 4mm x 6mm Screw; 3mm x 6mm	1 1 1 1 1 1 1 1 1 1 1 2 2 2 1 1 1 1 1 1	AN AC AB AA AF AA			
	7-1 7-2 7-3 7-4 7-5 7-6 7-7 7-8 7-9 7-10 7-11 7-12 7-13 7-14 7-15 7-16	TLABSA029WRR0 LHLDWA012WRE0 QTANP0020YBE0 TCAUHA055WRR0 XHTSD40P08RV0 LX-BZ0202WRE0 LX-CZA020WRE0 XCTWW40P08000 XCBWW30P06000 LX-CZ0052WRE0 XBPSD40P06KS0 XFPSD30P10000 XBPSD30P14K00 XBPSD30P14K00 XBPSD40P25000 LX-CZA030WRE0 XBPWW40P06000 XCPSD30P06000 XWVSD60-07000	Thermistor harness Fuse label Purse lock "L" Connector CE-230 Caution label SCREWS, NUTS AND WASHERS Screw; 4mm x 8mm Special screw Special screw Screw; 4mm x 8mm Screw; 3mm x 6mm Special screw Screw; 4mm x 6mm Special screw Screw; 4mm x 10mm Screw; 3mm x 14mm Screw; 3mm x 12mm Screw; 4mm x 25mm Screw; 4mm x 25mm Screw; 4mm x 25mm Screw; 4mm x 25mm Screw; 4mm x 6mm Screw; 4mm x 6mm Screw; 4mm x 6mm Screw; 3mm x 6mm Screw; 3mm x 6mm Screw; 3mm x 6mm	1 1 1 1 1 1 1 1 1 1 1 2 2 2 1 1 1 1 1 1	AN AC AB AA AF AA			
	6-11 6-12 6-13 7- 1 7- 2 7- 3 7- 4 7- 5 7- 6 7- 7 7- 8 7- 9 7-10 7-11 7-12 7-13 7-14 7-15 7-16 7-17	TLABSA029WRR0 LHLDWA012WRE0 QTANP0020YBE0 TCAUHA055WRR0 XHTSD40P08RV0 LX-BZ0202WRE0 LX-CZA020WRE0 XCTWW40P08000 XCBWW30P06000 LX-CZ0052WRE0 XBPSD40P06KS0 XFPSD30P10000 XBPSD30P14K00 XOTSD40P12RV0 XBPSD40P25000 LX-CZA030WRE0 XBTWW40P06000 XCPSD30P06000 XWVSD60-07000 XCPSD30P08X00	Thermistor harness Fuse label Purse lock "L" Connector CE-230 Caution label SCREWS, NUTS AND WASHERS Screw; 4mm x 8mm Special screw Special screw Screw; 4mm x 8mm Screw; 3mm x 6mm Special screw Screw; 4mm x 6mm Screw; 3mm x 10mm Screw; 3mm x 12mm Screw; 4mm x 25mm Screw; 4mm x 6mm Screw; 4mm x 6mm Screw; 4mm x 8mm Washer; 6mm x 0.7mm Screw; 3mm x 8mm	1 1 1 1 1 1 1 1 1 1 2 6 15 4 2 2 1 1 1 1 1 1 2 1 1 1 1 1 1 1 1 1 1	AN AC AB AA AF AA			
	6-11 6-12 6-13 7- 1 7- 2 7- 3 7- 4 7- 5 7- 6 7- 7 7- 8 7- 9 7-10 7-11 7-12 7-13 7-14 7-15 7-16 7-17 7-18	TLABSA029WRR0 LHLDWA012WRE0 QTANP0020YBE0 TCAUHA055WRR0 XHTSD40P08RV0 LX-BZ0202WRE0 LX-CZA020WRE0 XCTWW40P08000 XCBWW30P06000 LX-CZ0052WRE0 XBPSD40P06KS0 XFPSD30P10000 XBPSD30P14W00 XOTSD40P12RV0 XBPSD40P25000 XFPSD40P25000 XFPSD40P25000 XFPSD40P06000 XCPSD30P06000 XCPSD30P08000 XCPSD30P08000	Thermistor harness Fuse label Purse lock "L" Connector CE-230 Caution label SCREWS, NUTS AND WASHERS Screw; 4mm x 8mm Special screw Special screw Screw; 4mm x 8mm Screw; 3mm x 6mm Special screw Screw; 4mm x 10mm Screw; 3mm x 14mm Screw; 3mm x 12mm Screw; 4mm x 25mm Screw; 4mm x 25mm Screw; 4mm x 25mm Screw; 4mm x 6mm Special screw Screw; 4mm x 6mm Screw; 4mm x 25mm Screw; 4mm x 5mm Screw; 4mm x 6mm Screw; 4mm x 6mm Screw; 4mm x 6mm Screw; 4mm x 6mm Screw; 3mm x 6mm Washer; 6mm x 0.7mm Screw; 3mm x 8mm Screw; 3mm x 8mm Screw; 3mm x 8mm	1 1 1 1 1 1 1 1 1 1 2 2 2 1 1 1 1 1 2 2 2 8 5 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	AN AC AB AA AF AA			
	6-11 6-12 6-13 7- 1 7- 2 7- 3 7- 4 7- 5 7- 6 7- 7 7- 8 7- 9 7-10 7-11 7-12 7-13 7-14 7-15 7-16 7-17	TLABSA029WRR0 LHLDWA012WRE0 QTANP0020YBE0 TCAUHA055WRR0 XHTSD40P08RV0 LX-BZ0202WRE0 LX-CZA020WRE0 XCTWW40P08000 XCBWW30P06000 LX-CZ0052WRE0 XBPSD40P06KS0 XFPSD30P10000 XBPSD30P14K00 XOTSD40P12RV0 XBPSD40P25000 LX-CZA030WRE0 XBTWW40P06000 XCPSD30P06000 XWVSD60-07000 XCPSD30P08X00	Thermistor harness Fuse label Purse lock "L" Connector CE-230 Caution label SCREWS, NUTS AND WASHERS Screw; 4mm x 8mm Special screw Special screw Screw; 4mm x 8mm Screw; 3mm x 6mm Special screw Screw; 4mm x 6mm Screw; 3mm x 10mm Screw; 3mm x 12mm Screw; 4mm x 25mm Screw; 4mm x 6mm Screw; 4mm x 6mm Screw; 4mm x 8mm Washer; 6mm x 0.7mm Screw; 3mm x 8mm	1 1 1 1 1 1 1 1 1 1 2 6 15 4 2 2 1 1 1 1 1 1 2 1 1 1 1 1 1 1 1 1 1	AN AC AB AA AF AA			



Note: The parts marked " Δ " may cause undue microwave exposure. The parts marked "*" are used in voltage more than 250V.

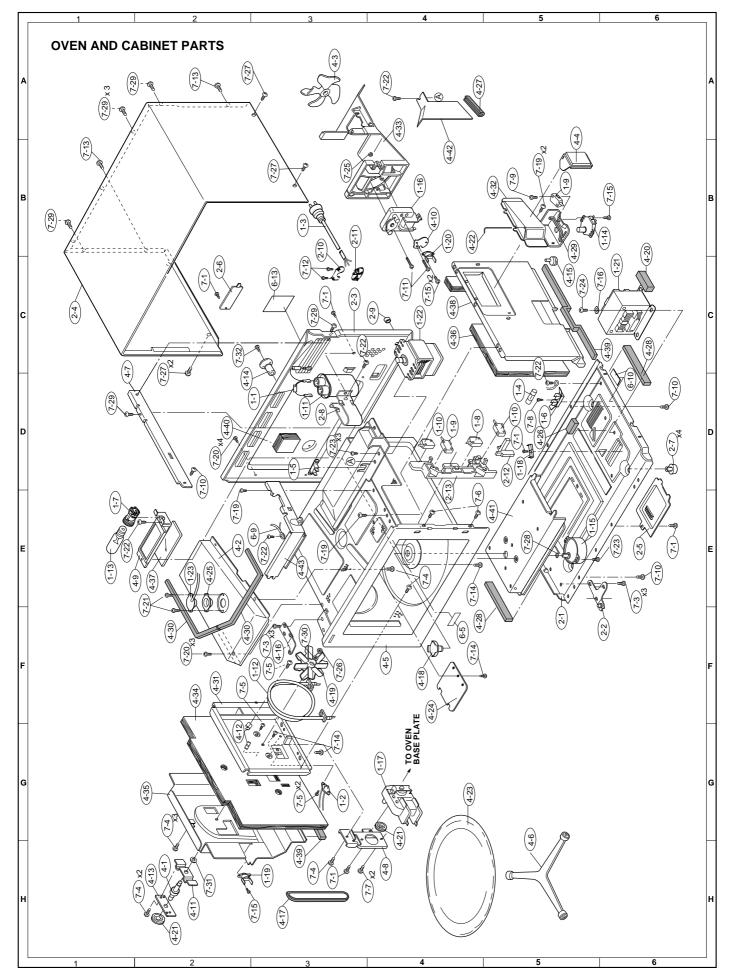
REF. NO.	PART NO.	DESCRIPTION	Q'TY	CODE
7-21	XFPSD30P08000	Screw; 3mm x 8mm	2	AA
7-22	XFPSD40P08K00	Screw; 4mm x 8mm	5	AA
7-23	XFPSD40P08000	Screw; 4mm x 8mm.	5	AA
7-24	XFPSD60P14JS0	Screw; 6mm x 14mm	2	AC
7-25	XNESD40-32000	Nut; 4mm x 3.2mm	4	AA
7-26	XNEUW40-32000	Nut; 4mm x 3.2mm	1	AA
7-27	XOTSE40P12000	Screw; 4mm x 12mm	4	AA
7-28	LX-WZA004WRE0	Washer	1	AA
7-29	XOTSD40P12000	Screw; 4mm x 12mm	8	AA
7-30	XWSUW40-10000	Washer; 4mm x 1mm	1	AA
7-31	LX-WZA022WRE0	Washer	1	AA
7-32	LX-CZA060WRE0	Special screw	1	AC

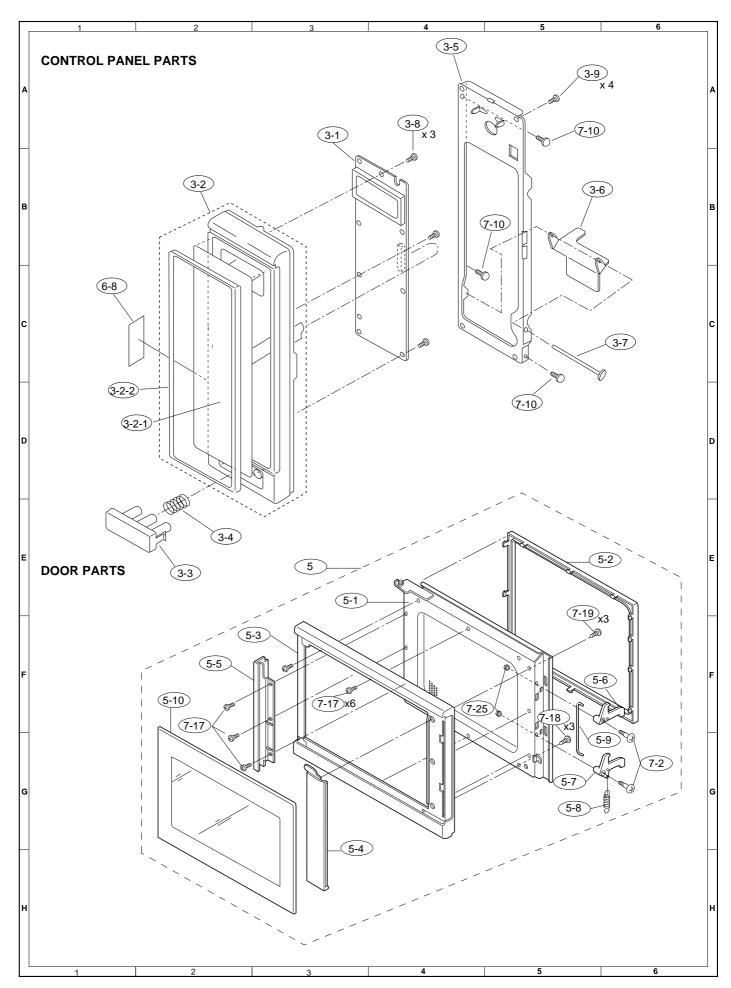
HOW TO ORDER REPLACEMENT PARTS

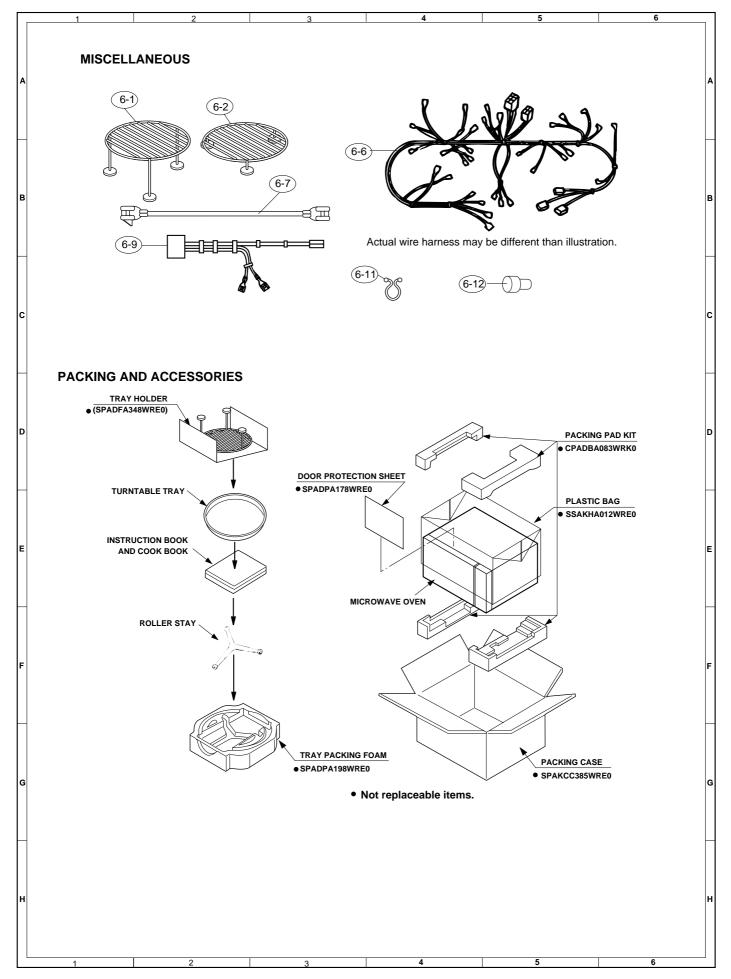
To have your order filled prompty and correctly, please furnish the following information.

1. MODEL NUMBER 2. REF. NO.

3. PART NO. 4. DESCRIPTION









SHARP